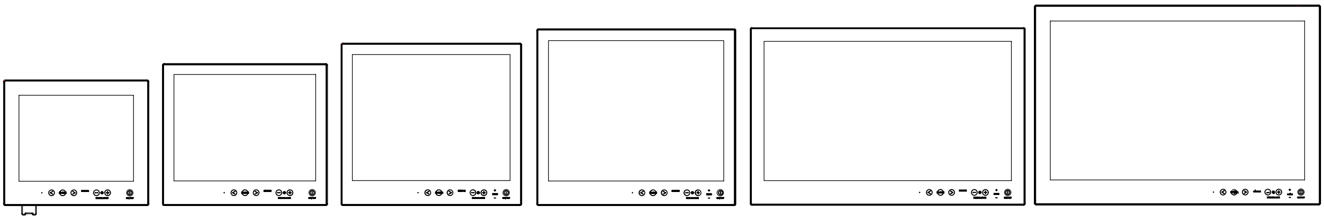
HATTELAND® DISPLAY

USER MANUAL



Series X - Standard Display (STD) Models

HD 12T21 STD-xxx-Fxxx - 12.1 inch Standard Display
HD 15T21 STD-xxx-Fxxx - 15.0 inch Standard Display
HD 17T21 STD-xxx-Fxxx - 17.0 inch Standard Display
HD 19T21 STD-xxx-Fxxx - 19.0 inch Standard Display
HD 24T21 STD-xxx-Fxxx - 24.0 inch Standard Display
HD 26T21 STD-xxx-Fxxx - 25.54 inch Standard Display

User Manual STD Series X	
Updated: 18 Jun 2013	Doc Id: INB100535-1 (Rev 3)
Created: 363 Approved: 6542	

Please visit www.hatteland-display.com for the latest electronic version of this manual.

Hatteland Display AS, Åmsosen, N-5578 Nedre Vats, Norway
Tel: (+47) 4814 2200 - mail@hatteland-display.com - www.hatteland-display.com

WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Last revised 9 Nov 2012

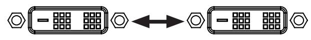
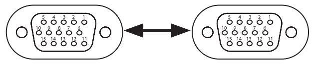
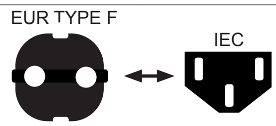
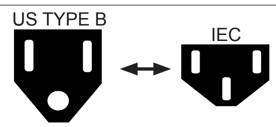
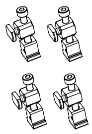
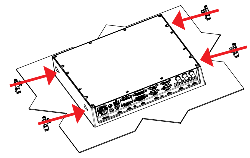
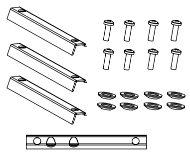
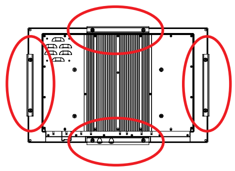
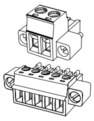
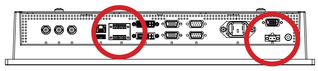
Contents

Contents

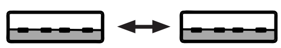
Contents

Contents of package

Note: Entries listed below are for Standard factory shipments. Customized factory shipments may deviate from this list.

Item	Description	Illustration
 HA-SDM-2M	1 pcs of Standard DVI Signal Cable. DVI-D 18+1P Male to DVI-D 18+1P Male Single Link - Length 2.0m	
 HA-VGA-2M-32	1 pcs of Standard VGA Signal Cable. DSUB 15P Male to DSUB 15P Male - Length 2.0m	
 FS-CABLE EU	1 pcs of power cable European Type F “Schuko” to IEC. Length 1.8m *Note: Included in package for models with AC input.*	
 80099	1 pcs of power cable US Type B plug to IEC. Length 1.8m *Note: Included in package for models with AC input.*	
 MEDIA STD01	Documentation and Driver DVD/CD containing the user manual, including the Touch Screen driver for units delivered with a factory mounted touch screen. For most recent drivers, please visit “www.hatteland-display.com/archive” In some cases (due to revisions) a provisional CD (PRO02-xxx) may be delivered with the unit instead.	 Menu browser for Microsoft® Windows® Operating Systems
	Test Report	
 HD CMB SX1-A1	Model Dependent: 4 pcs of Key Hole Mounting Brackets for Console/Panel Mounting, Anodized Aluminium/Stainless Steel. Suitable for panel thickness 3.0mm to 10.0mm. This bracket kit is suitable for 12, 15, 17 and 19 inch units.	
 HD CMB SX1-B1 or HD CMB SX1-C1	Model Dependent: Bracket Kit suitable for console/panel mounting which contains: 3 x Mounting Bracket for top, left and right side 1 x Mounting Bracket for bottom side (terminal/connector plate area) 8 x M5x16 screws 8 x C-Washers HD CMB SX1-B1 = Suitable only for 24 inch units. HD CMB SX1-C1 = Suitable only for 26 inch units.	
 Terminal Block Connector Kit	Terminal Block Connector Kit as follows (may in some cases be already factory mounted): 1 x 2-pin Terminal Block 5.08 (Phoenix 1805301) for DC Power In 2 x 5-pin Terminal Block 3.81 (Phoenix 1827732) for RS-422 / RS-485 / SCOM / Buzzer Module Refer to “Configuring Housing / Terminal Block Connector” section for usage.	 Note: Location of module(s) may differ between unit sizes

Package may also include:

Item	Description	Illustration
 USB-8	1 pcs of Touch Screen Cable USB Type A to Type A. Length Approx 2m. *Only included in package if model is equipped with factory mounted Touch Screen*	

General

About this manual

The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the “Revision History” chapter at the end of the manual.

Furthermore, for third party datasheet and user manuals, please see dedicated Documentation and Driver DVD delivered with the product or contact our sales/technical/helpdesk personnel for support.

About Hatteland Display

Hatteland Display is the leading technology provider of specialized display and computer products, delivering high quality, unique and customized solutions to the international maritime, naval and industrial markets.

The company represents innovation and quality to the system integrators world wide. Effective quality assurance and investment in sophisticated in-house manufacturing methods and facilities enable us to deliver Type Approved and Mil tested products. Our customer oriented approach, technical knowledge and dedication to R&D, makes us a trusted and preferred supplier of approved solutions, which are backed up by a strong service network.

www.hatteland-display.com

You will find our website full of useful information to help you make an informed choice as to the right product for your needs. You will find detailed product descriptions and specifications for the entire range on Displays, Computers and Panel Computers, Military solutions as well as the range of supporting accessories. The site carries a wealth of information regarding our product testing and approvals in addition to company contact information for our various offices around the world, the global service centers and the technical help desk, all ensuring the best possible support wherever you, or your vessel, may be in the world.

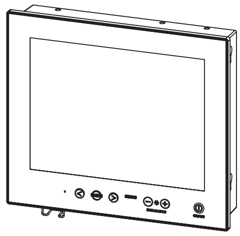
Contact Information

Head office, Vats / Norway: Hatteland Display AS Åmsosen N-5578 Nedre Vats, Norway Tel: +47 4814 2200 Fax: +47 5276 5444 mail@hatteland-display.com	**Sales office, Frankfurt / Germany:** Hatteland Display GmbH Werner Heisenberg Strasse 12, D-63263 Neu-Isenburg, Germany Tel: +49 6102 370 954 Fax: +49 6102 370 968
Sales office, Oslo / Norway: Solbråveien 20 N-1383 Asker Norway Tel: +47 4814 2200 Fax: +47 5276 5444	**Sales office, Aix-en-Provence / France:** Hatteland Display SAS ACTIMART, 1140 RUE AMPERE, BP 50 196 13795 AIX-EN-PROVENCE, CEDEX 3 France Tel: +33 (0) 4 42 16 47 57 Fax: +33 (0) 4 42 16 47 00
Sales office, San Diego / USA: Hatteland Display Inc. 11440 W. Bernardo Court, Suite 300 San Diego, CA 92127, USA Tel: +1 858 753 1959 Fax: +1 858-408-1834	

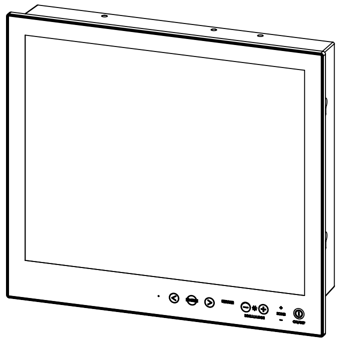
For an up-2-date list, please visit www.hatteland-display.com/locations

Standard Display (STD) - Introduction

Series X Displays and Panel Computers offer the ultimate in performance, convenience, state of the art design and enduring quality for system integrators and boat builders. Series X products offer a range of feature sets optimized for varying requirements and applications.



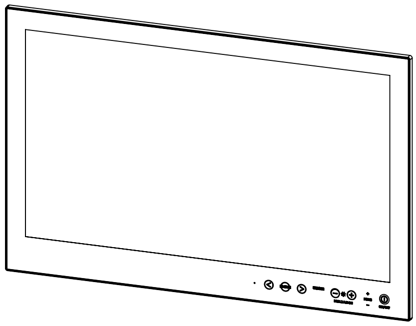
The Series X display range is a flexible monitor solution designed and type approved for the professional maritime segment, where reliability and long life time are key pre-requisites for the industry. The product range combines stunning design and technology with innovative features and options, making it all that the integrator needs for top class type-approved marine systems.



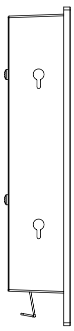
The entry level STD models provide a wide choice of display size and format for shipboard applications where simple data input (RGB & DVI) is required. Be it for ship navigation or automation, this range with all it's possible options provides a robust and cost effective platform from which to display and manage data.

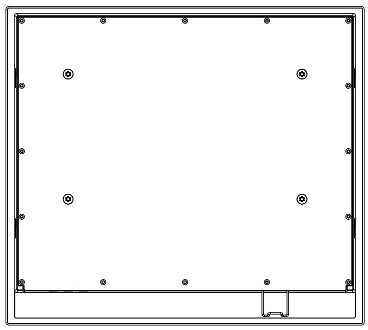
Series X displays feature HATTELAND® Glass Display Control™, LED backlight technology, full dimming and multipower* as standard, and can also accomodate and combine a number of options such as touch screen, optical bonding, sunlight readability** and ECDIS calibration***.

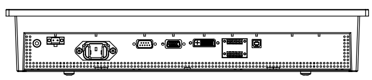
* Multipower not available for all sizes due to factory defined specifications and space restrictions.
** High Bright / Sunlight Readable available for 12 and 15 units. Other units pending 2012.
*** ECDIS is only suitable for sizes above 15".



- MULTITOUCH
- TYPE APPROVED
- ECDIS COMPLIANT
- IP22 REAR / IP66 FRONT
- SUPERIOR BONDING TECHNOLOGY
- MODULE BASED, TAILOR-MADE SYSTEMS MADE EASY!
- SUNLIGHT READABLE / HIGH BRIGHT VERSIONS AVAILABLE
- GLASS DISPLAY CONTROL™ (GDC), SOLID STATE MENU SYSTEM







Touch screen products

Introduction to products with touch screen

Nearly all of our Series X products with touch screen uses Projected Capacitive Touch screen (PCTS), widely used with great success on mobile phones and typical pad devices. PCTS can be equally effective also for marine applications. One of the advantages of PCTS is that it has features seen in both resistive and surface capacitive touch screen technologies.

Multitouch is defined as the ability to recognize two or more simultaneous touch points. Using projected capacitive technology lets us create a more intuitive form of human-device interaction. Touch interface gestures, supported by projected capacitive sensors, can simplify the interface and provide an intuitive user experience that goes beyond the typical "button replacement" found in most simple touch interfaces.

Please review the appropriate Product Data Sheet (in this manual) to determine if PCTS are supported.

The technical benefits of PCT are:

- Very good optical performance (same as surface capacitive)

- Environmentally strong, the touch sensor is inside the product (better than both surface capacitive and resistive)

- Supports Multitouch (Newer Operating System (OS) required/dependent, see next page for info, section "*Note")

- Strong against rain / drip

- Excellent readability - light transmission of up to 91% through a standard sensor

- Stability - no drift, therefore no recalibration is required

- Pointing device - works with gloved and ungloved finger

- Resistance to contamination - by harsh cleaning fluids and other noxious substances

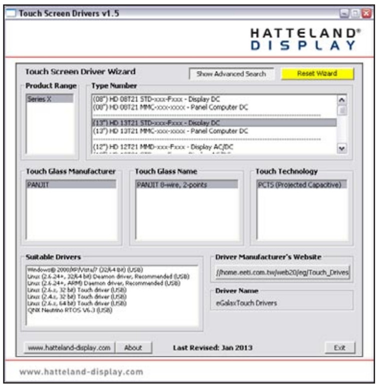
- Communicates via USB to external computer or internally

Main usability, performance and integration characteristics are:

Technology	Optical Performance	Stable Calibration	Gloves	Water	Durability	Price	Multitouch	Frameless Design
Analog Resisitive	- -	+	+ +	+ +	-	+ +	-	-
Surface Capacitive	+ +	-	- -	-	+	-	-	-
Projected Capacitive*	+ +	+ +	+	+	+ +	-	+ +	+ +

*Used for all Hatteland Display standard Series X Touch Screen products.
Note: 26 inch and/or customized solutions may use "Analog" or "Surface" resistive/capactive technology instead, please review datasheet.

Touch Screen Drivers and Documentation



All units are shipped with a Documentation and Drivers DVD or CD which contains suitable drivers* for touch screens. (Named MEDIA STD01).

You can also visit our website www.hatteland-display.com to view the same list (or even recently new added products) for our models with touch screen.

Before using the touch screen, it should be calibrated for your system. Please install the 3rd party software* and use the Calibrate function.

For additional touch controller/screen documentation and updated drivers*, please visit the 3rd party manufacturer website as found in the Touch Screen Wizard CD menu.

***Note:**
Newer Operating Systems (OS), from year 2011 and above, does not specifically require additional 3rd party drivers in order to operate the touch screen and support “Multitouch”. For example; Microsoft® Windows® 7 and above comes with default factory installed Windows HID drivers fully supporting “Multitouch”. You may choose to install 3rd party drivers for example during trouble-shooting situations or to review features of the 3rd party software. Hatteland Display suggests that you should use factory default Microsoft® Windows® 7 HID touch drivers in any case possible.

For older Operating Systems (like Microsoft® Windows® XP and older), before year 2011, the OS does not/may not support “Multitouch” technology and the touch screen will just operate as a ordinary single-point touch screen. Additionally to get touch screen working at all in older OS, you need to install 3rd party drivers.

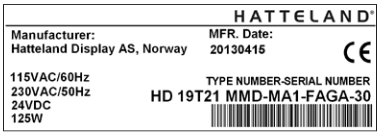
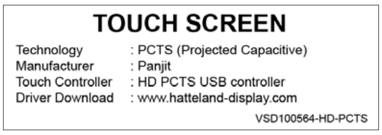
Note that the lack of “Multitouch” support is not dependent on hardware or software/firmware for the controller, but rather dependent on important core functions in the Operating System which is outside control of the 3rd party software.

Product Labeling

Introduction

This section details the locations, content details and specifications for factory mounted labels for all currently available standard Hatteland Display Standard Industrial Display (STD) models. This information will in most cases also apply for most Customized Models as well, but may differ based on customer requirements, in that case, please refer to the customized User Manual (paper or electronic version, dependent on customer requirements).

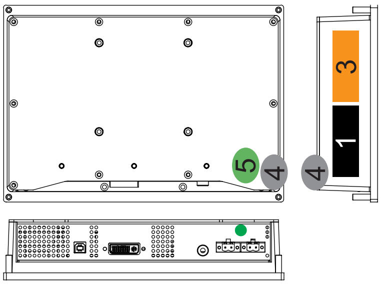
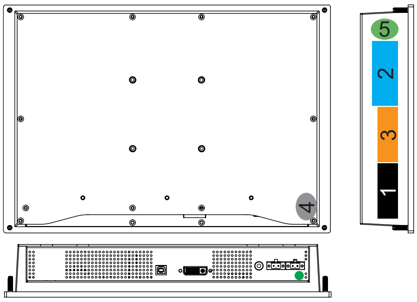
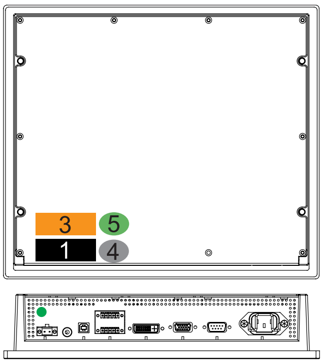
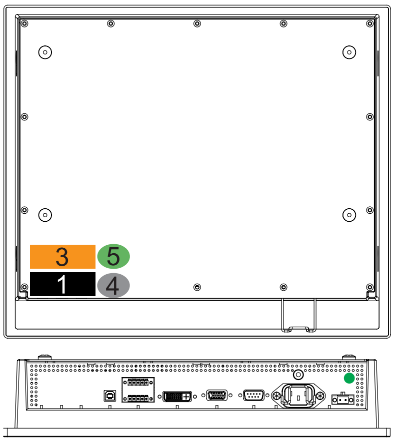
Label Size and Types

ID	Label Layout	Description	Specification
1		**Type** **: Serial Number Label** **Name** : Label B **Size** : 60mm wide x 22mm high (rectangle size) Note: Text content of label will match specifications derived from Data Sheet.	Silver with glue on back, non-tearable and made for thermal transfer printing.
		Barcode type: CODE128 (used extensively world wide in shipping and packaging industries. The symbology was formerly defined as ISO/IEC 15417:2007.)	
3		**Type** **: Touch Screen Label** **Name** : Label B **Size** : 60mm wide x 22mm high (rectangle size) Note: Only present if Touch Screen was part of factory option order. Text content of label will vary depending on touch screen technology used.	Silver with glue on back, non-tearable and made for thermal transfer printing.
4		**Type** **: Warranty Label** **Size** : 30mm wide x 23mm high (oval size)	Tampering proof sticker with glue on back.
5		**Type** **: Quality Control (QC) Label** **Size** : 30mm wide x 23mm high (oval size)	Ordinary sticker with glue on back.
N/A	As shown (green dot, no text)	**Type** **: Product Tested OK in Production Label** **Size** : 10mm (circle in diameter) Note: Located on Terminal/Connector metal plate, near Power Input/Output connectors.	Ordinary sticker with glue on back.

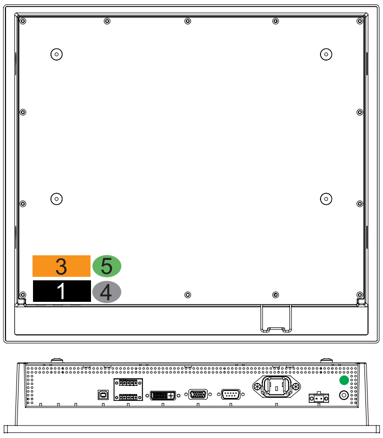
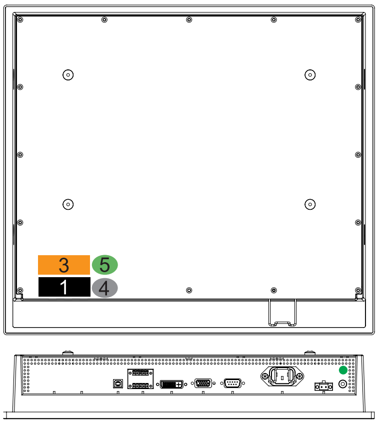
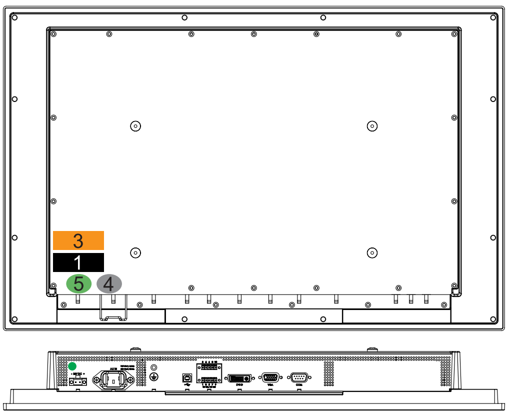
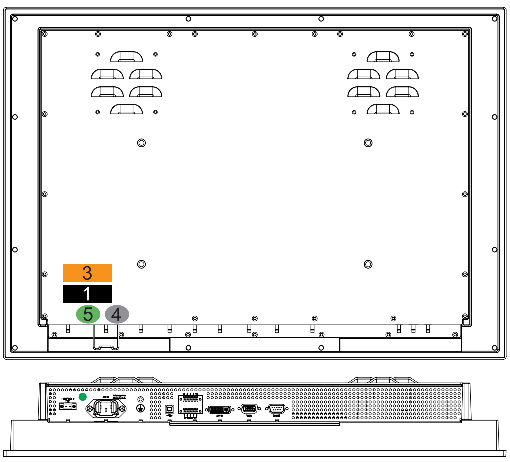
Product Labeling

Label Locations

Number ID and coloring based on “Label Size and Types“ table from previous page. All illustrations below is seen from rear (and side where needed) with connectors facing down. Actual labels regarding its size and text orientation vs product size is drawn in. Due to space restrictions on selected units, some labels will be rotated 90 degrees to fit properly. The arrangement of labels may be shifted/stacked differently as it is based on factory options, such as; Touch Screen, but they will be grouped together where possible.

Label Positions	Notes	Applies for Product Range
	Warranty label covers both screw and bends over edge (rear/side). Labels placed on rear and side.	**HD 08T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear and side.	**HD 13T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear.	**HD 12T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear.	**HD 15T21 STD-xxx-Fxxx**

Product Labeling

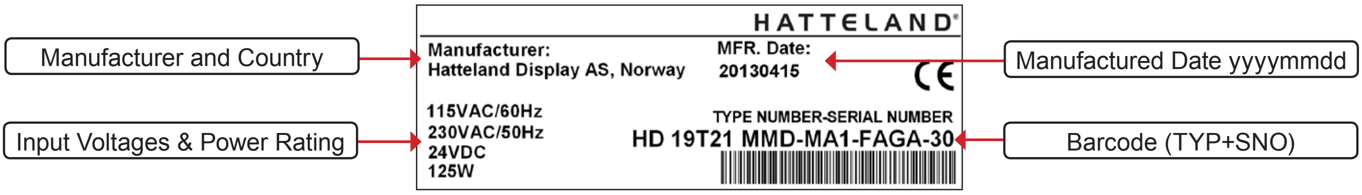
	Warranty label covers screw. Labels placed on rear.	**HD 17T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear.	**HD 19T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear.	**HD 24T21 STD-xxx-Fxxx**
	Warranty label covers screw. Labels placed on rear.	**HD 24T21 STD-xxx-Fxxx**

Product Labeling

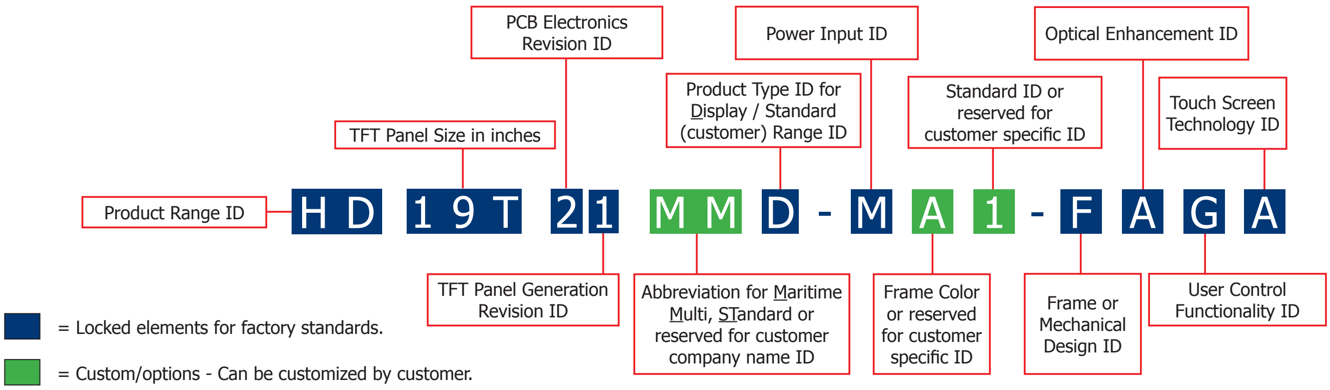
Warranty Label
If you are to perform service on a unit still under warranty, any warranty will be void if this label show signs of removal attempts (re-gluing) or removed completely. This label is located on the back of the product and covers a key screw. This is to aid service departments to determine if there has been any unauthorized service on a unit still under warranty.

Quality Control (QC) Label
This label indicates that the unit is produced, tested and packed according to manufacturer's QA specifications. It will include a Personal ID and signature by the personnell responsible for approving the unit in production, test and warehouse departments.

Serial Number Label Layout (example)



Typenumber Structure (example)
Type Number shown below may not match your actual unit, but structure ID description applies for the entire product range. Reference: http://www.hatteland-display.com/pdflink/ind100780-3.php



This page left intentionally blank

Installation

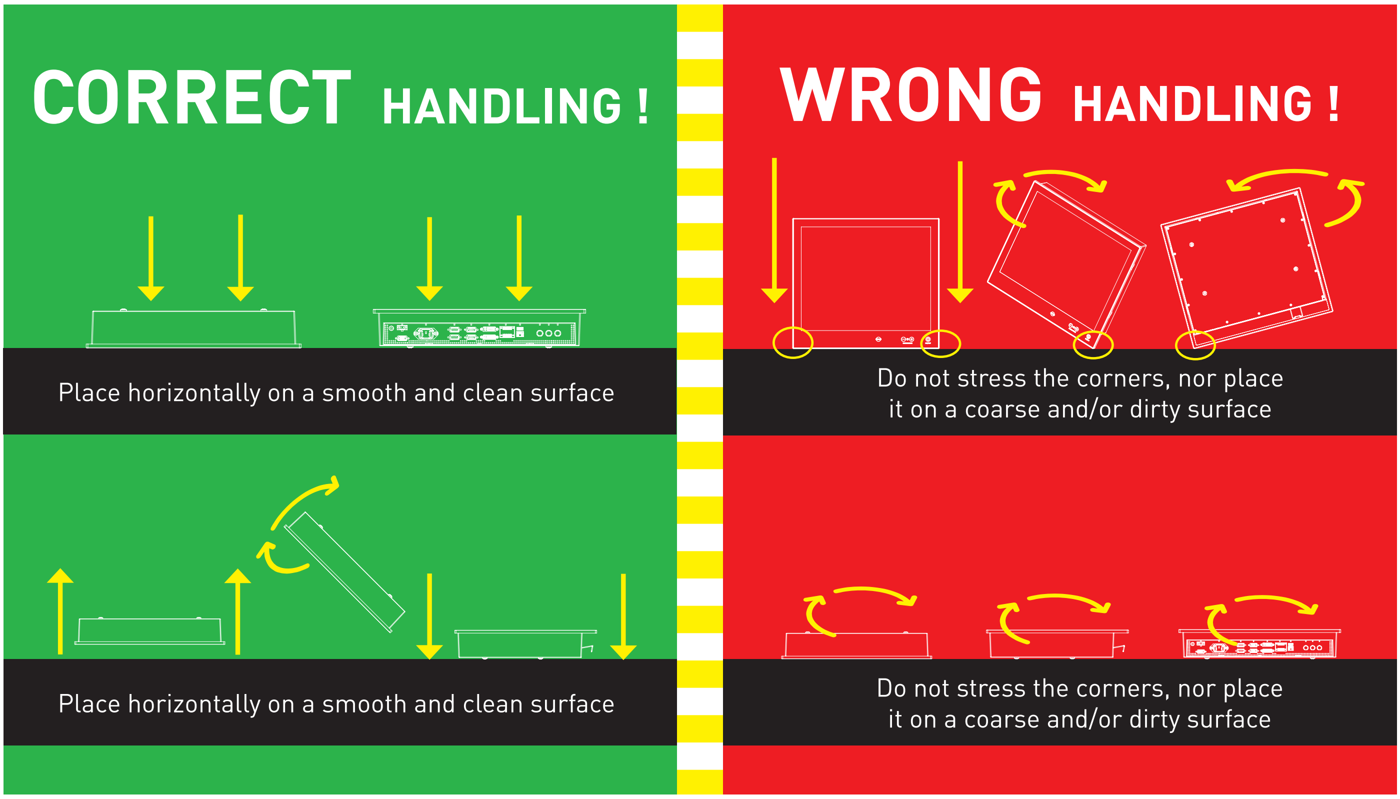
General Installation Recommendations

First Things First!

ATTENTION!

IND100148-5 - Rev 02

To prevent damage to chassis and glass, please review the illustrations below before handling units.



Installation and mounting

1. Most of our products are intended for various methods of installation or mounting (panel mounting, bracket mounting, ceiling/wall, console mounting etc.); for details, please see the relevant mechanical drawings.

2. Adequate ventilation is a necessary prerequisite for the life of the product. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible.

3. Generally, do not install the unit in a horizontal position (laying down), as this will cause heat to build up inside the unit which will damage the LCD Panel. To prevent this problem we recommend installing the unit in a vertical position (±30 degrees) to improve the airflow through the unit.

4. To further improve the thermal situation we recommend to use forced air passing by the product. In some cases, convection based cooling can create “heat zones” around the product. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting.

5. Exposure to extreme direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)

6. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.

7. If the push buttons of the product are not illuminated, an external, dimmable illumination (IEC 60945 Ed. 4, 4.2.2.3, e.g. Goose neck light) is required for navigational use. The illumination shall be dazzle-free and adjustable to extinction.

8. Information about necessary pull-relievers for cables is indicated in the Physical Connection section of this manual. Attention must be paid to this information so that cable breaks will not occur, e.g. during service work.

9. Do not paint the product. The surface treatment influences on the excess heat transfer. Painting, labels or other surface treatments that differ from the factory default, might cause overheating.

10. Expose to heavy vibration and acoustic noise might under certain circumstances affect functionality and expected lifetime. This must be considered during system assembly and installation. Mounting position must carefully be selected to avoid any exposure of amplified vibration.

Installation limitations

Due to environmental factors, please review the points noted below.

A: Overheat prevention:

For Maritime Multi Computer (MMC, Panel Computers) it is advised that you do not mount the unit in a vertical angle lower than ±30 degrees, as noted in point 3 (previous section), i.e. flat mounting of the unit. This is to prevent both overheating the unit as well as ensure proper cooling airflow to sustain long-life and stable operation. Panel Computer units generate more heat than regular Display units naturally because of CPU and mainboard chips.

It should be noted that 24” and 26” MMC units have internal fans providing additional cooling airflow of their own, whilst smaller units (typically 8” to 19”) has no internal fans. In such cases, the ±30 vertical angle may in certain situations allow for lower angle mounting provided that the console casing has adequate cooling (see point D), however this is suggested as a trouble-shooting tip during installation or during short-term observer use if found suitable. It should not be considered as a defintive trusted solution.

B: Glass Display Control™ (GDC) front glass touch buttons:

As this uses Projected Capacitive technology (instead of conventional hard physical buttons and knobs), the touch controller can react and are sensitive to raindrops (for outdoor installations). To ensure that raindrops do not stay on the unit’s flat glass surface, please do not mount the unit in a vertical angle lower than ±30 degrees, i.e. flat mounting of the unit. This is to prevent accidental touches that are similar to a human finger (cover area for a x period of seconds) as well as make sure the raindrops are “moving” and slides down off the glass surface.

For Maritime Multi Display / Industrial Standard Display (MMD/STD) units (not Panel Computer units) the angle could potentionally be lower as the On Screen Display (OSD) menu offers a “OSD Key Outdoor” function with 5 seconds delay before activation on front glass functions. Please review the “OSD Menu Functions” to learn more. In certain situations this might help, but is only suggested as a trouble-shooting tip during installation or during short-term observer use if found suitable. It should not be considered as a defintive trusted solution.

C: Projected Capacitive Technology (PCTouch) MULTITOUCH and in general Touch Screen glass:

For all units with a factory mounted touch screen and for outdoor use especially, please review point B above regarding staying raindrops. Only solution to this situation is not to mount the unit in a vertical angle lower than ±30 degrees, i.e. flat mounting of the unit to ensure touch screen is not activated and accidentally automatically chooses functions in your running chart, radar or other software installed.

D: General rule for console mounted units:

To ensure proper cooling airflow, long-life and stable operation for all units, please make sure that the console casing have either fans or decent ventilation holes to prevent overheating inside the console due to the combined temperature of both Display or Panel Computer units together with other electronic instruments. A general rule is to make sure the console casing is capable of expelling “worst case scenario” in respect of the “Max Power Consumption” of all devices installed. Please review also point 2, 5, 6 and 9 (previous section) for additional information and installation tips.

Note that 24” and 26” Panel Computer units have their own internal fans. See point A for more information.

General mounting instructions

1. The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the display unit.

2. With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.

3. In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned.

4. Units which are to be used on the bridge wing must be installed inside the “wing control console” protected against the weather. In order to avoid misting of the viewing screen, a 25 ... 50 W console-heating (power depending on the volume) is recommended.

5. When selecting the site of a display unit, the maximum cable lengths have to be considered.

6. When a product is being installed, the surface base or bulkhead must be checked to ensure that it is flat in order to avoid twisting of the unit when the fixing screws are tightened, because such twisting would impair mechanical functions. Any unevenness should be compensated for by means of spacing-washers.

7. The product should be properly grounded, a shorter and thicker cable gives better grounding. A $6mm^2$ is recommended, but a $4mm^2$ or even $2.5mm^2$ can be used for this purpose.

8. Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

9. The classification is only valid for approved mounting brackets provided by Hatteland Display. The unit shall be mounted stand-alone without any devices or loose parts placed at or nearby the unit. Any other type of mounting might require test and re-classification.

General Installation Recommendations

Ergonomics

1. The front surface of the display glass has an anti-reflective (AR) coating which can be scratched and damaged with improper cleaning. It is recommended to use only 90+% pure Isopropyl alcohol (Isopropanol) and a soft fabric cloth for this first cleaning. Fold a cloth into a small pad, dampen the cloth with alcohol, and wipe the glass from one edge to the other in one direction with one continuous motion. The product glass will require cleaning as needed. The soft cloth & alcohol wipe is recommended to clean fingerprints and oils off the glass. Water stains (including coffee, tea & coke) should be first cleaned off the glass with a soft fabric cloth wet with water, immediately followed with wiping using an alcohol wetted cloth.

2. Adjust the unit height so that the top of the screen is at or below eye level. Your eyes should look slightly downwards when viewing the middle of the screen.

3. Adjust screen inclination to remain gaze angle to the centre of the screen approximately perpendicular to the line of gaze.

4. When products are to be operated both from a sitting position and from a standing position, a screen inclination of about 30° to 40° (from a vertical plane) has turned out to be favourable.

5. The brightness of displays is limited. Sunlight passing directly through the bridge windows - or its reflection - which falls upon the screen workplaces must be reduced by suitable means (negatively inclined window surfaces, venetian blinds, distance from the windows, dark colouring of the deckhead). However, units can be offered with optical enhanced technology and/or High Bright panels to reduce reflections and are viewable in direct sun light, but as a general rule the units at the bridge wing area is recommended to be installed or mounted by suitable alignment or bulkhead / deckhead mounting in such a way that reflections of light from the front pane of the display are not directed into the observer's viewing direction.

6. The use of ordinary commercial filter plates or filter films is not permitted for items of equipment that require approval (by optical effects, "aids" of that kind can suppress small radar targets, for example).

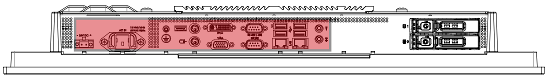
7. For ECDIS applications, the minimum recommended viewing distance are as follows:
(IEC62288, Part 7.5 Screen resolution)

17 inch = 908mm	19 inch = 1011mm	20 inch = 878mm	23 inch = 1011mm	27 inch = 1000mm	

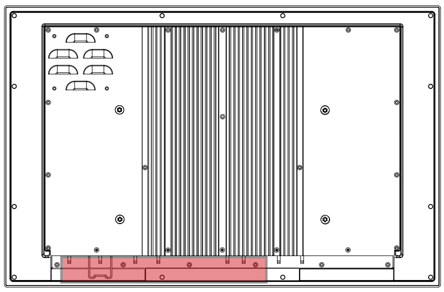
Cables
Use only high quality shielded signal cables.

Cable Entries & Connectors (Marked area) - Illustration only

Bottom View



Back View



General Installation Recommendations

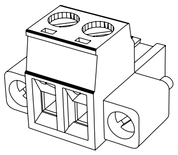
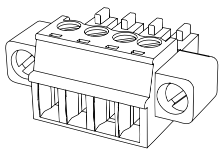
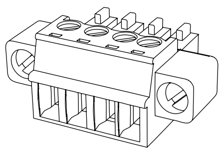
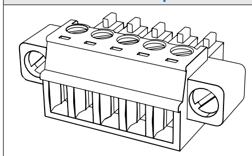
Maximum Cable Length

Any cable should generally be kept as short as possible to provide a high quality input/output. The maximum signal cable length will depend on the signal resolution and frequency, but also on the quality of the signal output from the computer/radar.

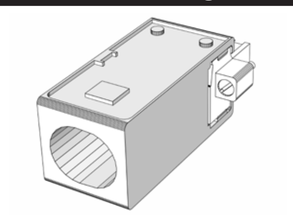
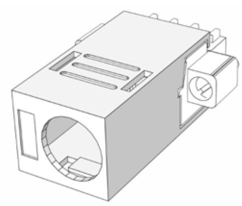
Housing / Terminal Block Connector Overview

Housing / Terminal Block connectors are available in different sizes (2-pin, 4-pin, 5-pin) which plugs into the connector area of the unit. They are mounted by factory default and delivered with the unit. The housing / terminal block connectors have steering rails, which ensures that it can not be mounted wrong. The color of these connectors may vary between black, green and orange depending on manufacturer. You may use approved equivalents of these connectors, but note that warranty will be void if any damage would occur to either the unit's original PCB terminal socket connector or inside the unit (electronic components, boards etc.).

The following table outlines the specifications for connecters commonly used by Hatteland Display:

Illustration	Pins	Manufacturer Details	Connector used for module
	2-pin	Phoenix 1805301 MSTBT 2,5/ 2-STF-5,08	• DC Power IN (24VDC, Single or Dual) Identified on Hatteland Display product data sheet as: "Terminal Block 5.08"
Reference: http://catalog.phoenixcontact.net/phoenix/treeViewClick.do?reloadFrame=true&UID=1805301			
	4-pin	Phoenix 1827732 MC 1,5/ 5-STF-3,81	• Digital Output / Input (Solid State Relay) Identified on Hatteland Display product data sheet as: "Terminal Block 3.81"
Reference: http://catalog.phoenixcontact.net/phoenix/treeViewClick.do?reloadFrame=true&UID=1827732			
	4-pin	Weidmüller 1792970000 BCZ 3.81/04/180F SN BK BX	• CAN Interface (HT 00254 OPT-A1) Identified on Hatteland Display product data sheet as: "Terminal Block 3.81"
Reference: http://catalog.weidmueller.com/catalog/Start.do?localeId=en&ObjectID=1792970000			
	5-pin	Phoenix 1827732 MC 1,5/ 5-STF-3,81	• RS-422 / RS-485 / SCOM (Serial Remote Control) / Buzzer • RS-422 / RS-485 NMEA (PCA100293-1) • Digital Output (Safety Signal Relay, single) • Digital Output & Serial I/O (Mech. Relay / RS-422/RS-485) • Digital Input/Output (HT 00268 OPT-A1) Identified on Hatteland Display product data sheet as: "Terminal Block 3.81"
Reference: http://catalog.phoenixcontact.net/phoenix/treeViewClick.do?reloadFrame=true&UID=1827732			

If your installation require additional cable fasteners support, please visit and purchase directly from manufacturer:
*Note: Illustrations below are approximate, actual Housing and Hood may deviate slightly, but function remains the same.

Phoenix Cable Housing - Illustration	Weidmüller Cover Hood - Illustration
 Phoenix 1803934 - KGG-MSTB 2,5/ 2 (2-pin) Phoenix 1834369 - KGG-MC 1,5/ 4 (4-pin) Phoenix 1834372 - KGG-MC 1,5/ 5 (5-pin)	 Weidmüller 1005290000 - BCZ 3.81 AH04 BK BX (4-pin)
For Phoenix 2-pin, 4-pin and 5-pin: https://www.phoenixcontact.com/online/portal/us?uri=pxc-oc-itemdetail:pid=1803934&library=usen&pcck=P-11-02-01&tab=1 https://www.phoenixcontact.com/online/portal/us?uri=pxc-oc-itemdetail:pid=1834369&library=usen&pcck=P-11-02-01&tab=1 https://www.phoenixcontact.com/online/portal/us?uri=pxc-oc-itemdetail:pid=1834372&library=usen&pcck=P-11-02-01&tab=1 For Weidmüller 4-pin: http://catalog.weidmueller.com/procat/Accessories.jsp;jsessionid=4E3AF6206ACA756C44BD69A5B6F62D48?page=Accessories&productId=(%5b1792970000%5d)	

Configuring Housing / Terminal Block connectors

Below is a brief illustration that might be useful during configuration and installation of such connectors. You will need suitable pre-configured cable(s) and tools to configure the connector(s) and cable(s) that are present in your installation environment. Below is a sample procedure for a 2-pin DC power connector. The procedure is the same for other connectors of this type as listed in table above.

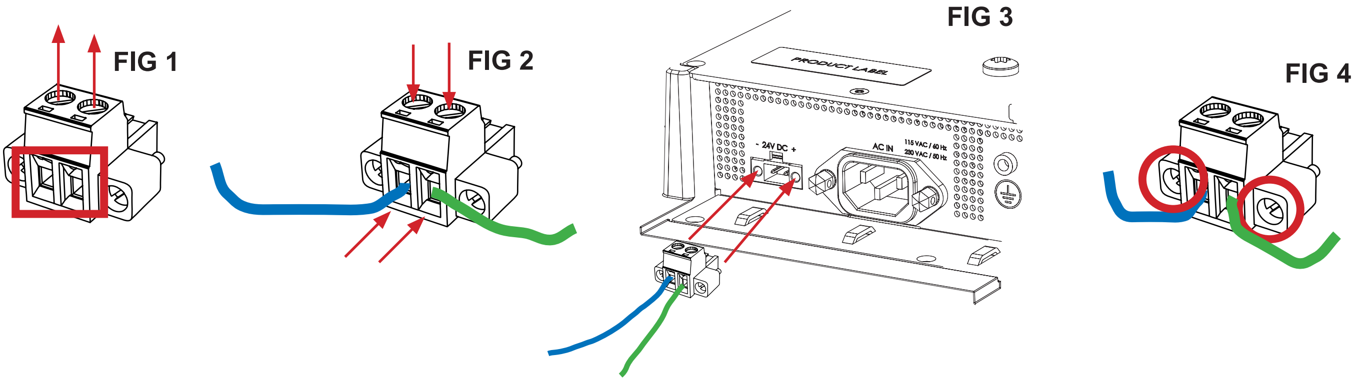


FIG 1: Unscrew (from top) or make sure that the screw terminal (square area) are fully open, so you can secure the inserted cables correctly to the loose housing connector (it may already be plugged into the unit as per factory installation).

FIG 2: Insert cables* (from front) and screw / secure the cables by turning the screw on top of the housing to secure the cables properly. Check that the cables is firmly in place and do not appear loose or falls out when pulling gently.

**Note: Required polarization verification (for instance -/+ for DC power input) should conform with the markings on the connector area of the unit. Ignoring the markings on the unit or its add-on modules might damage the unit and/or external equipment in which end, warranty will be void.*

FIG 3: Plug the housing into the appropriate connector area of the unit (glass should be facing down) and check again that the cables secured conforms with the markings on the connector area of the unit. Finalize the installation by fasten the screws located in front on each side of the housing connector **(FIG 4).**

Installation Procedures

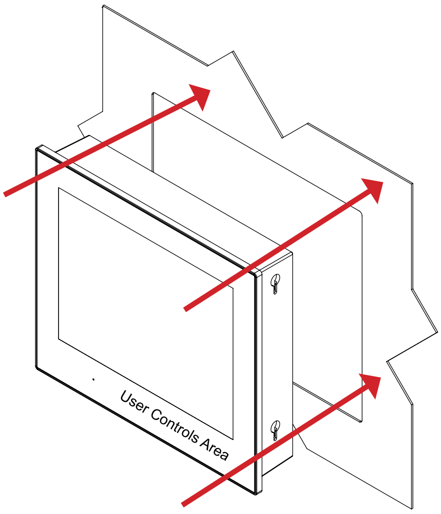
Panel / Console Mounting Key Hole Bracket Kit for 12",15",17",19"

You need: Allen Wrench tool (3mm), 4 pcs of HD CMB SX1-A1 kit (included in delivery).
Procedure suitable for: Display and Panel Computers Series X range.

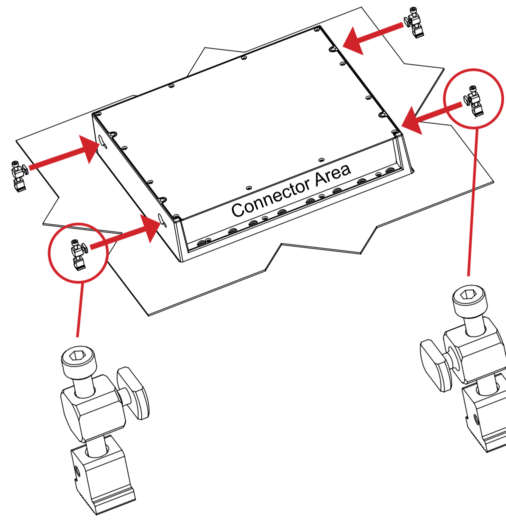


Attention: A suitable pre-cut panel cutout should be made prior to mounting. Do not force the unit into the panel cutout as it might break the outer glass or scratch the chassis on the unit. Make sure that the panel cutout is not too tight for the unit. Please disconnect ALL cables before proceeding. Please re-check the relevant and required panel cutout measurements if unsure.

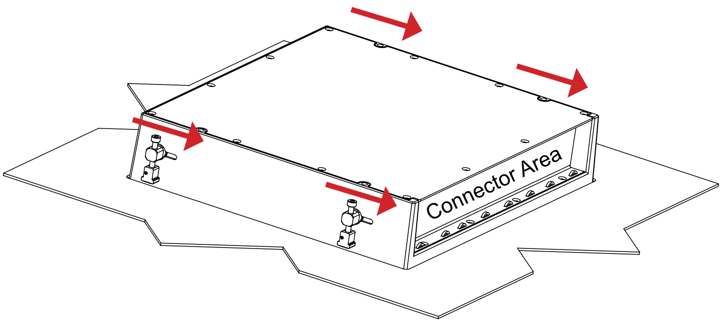
1: Slide the unit into the cutout carefully. User Controls and Connector Area should be facing downwards.



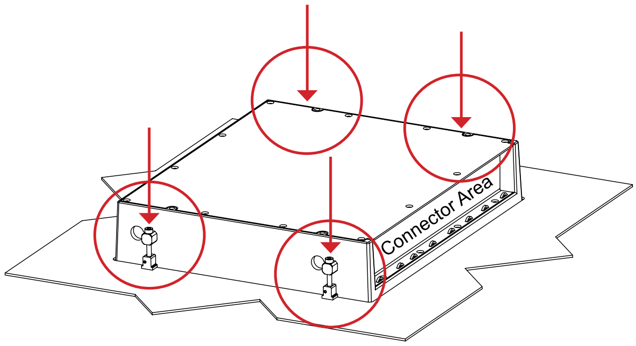
2: Prepare and position the brackets into each of the four key holes. The key part goes into the unit's largest area of the keyhole, while the Allen screw is visible at the top. See closeup.

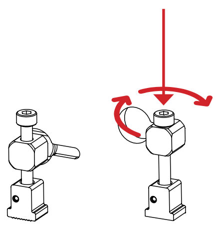


3: When all brackets fits inside the keyhole, slide them down into the narrow gap. If you are unable to slide them down, simply adjust/loosen the top Allen Screw slightly and try again.



4: Secure the unit by fastening the top Allen screws fairly. Make sure you do it equally and even for all 4 sides. Do not use excessive force. See closeup of a open and closed position to the right.





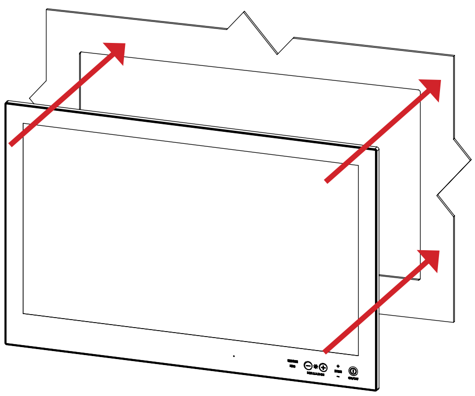
Installation Procedures

Panel Cutout / Console Mounting Bracket Kit for 24”,26”

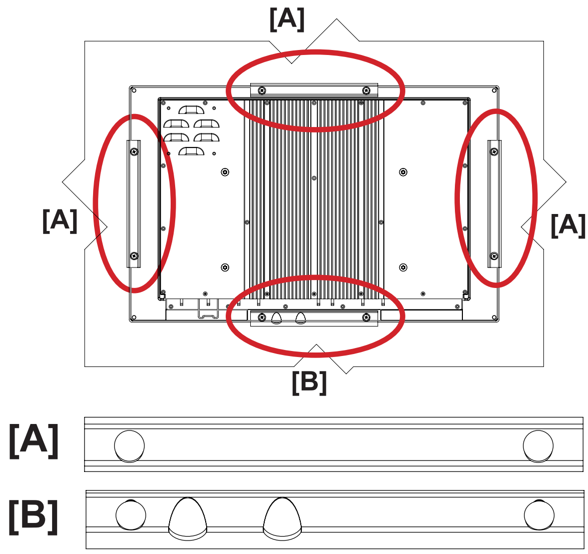
You need: Pozidriv tool, 1 pcs of HD CMB SX1-B1 kit (included in delivery).
Procedure suitable for: Display and Panel Computers Series X range. 24 inch used as illustration below, but same procedure also valid for 26 inch models.

Attention: A suitable pre-cut panel cutout should be made prior to mounting. Do not force the unit into the panel cutout as it might break the outer glass or scratch the chassis on the unit. Make sure that the panel cutout is not too tight for the unit. Please disconnect ALL cables before proceeding. Please re-check the relevant and required panel cutout measurements if unsure.

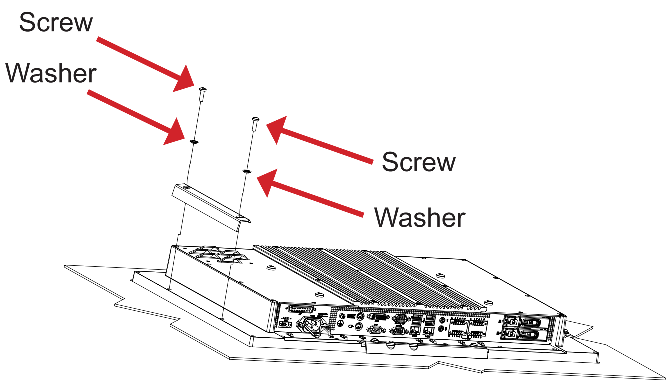
1: Slide the unit into the cutout carefully. User Controls and Connector Area should be facing downwards.



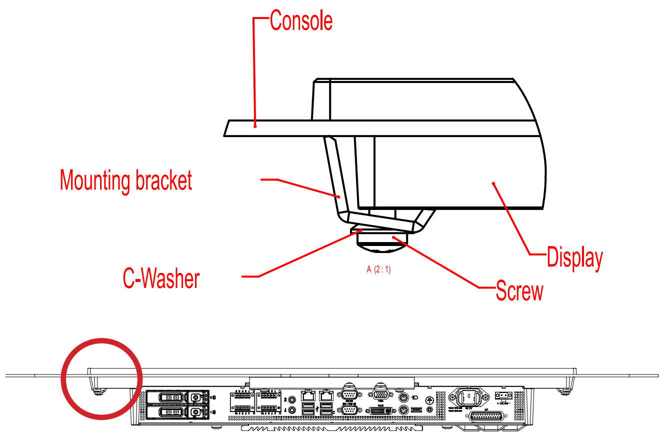
2: Make sure you are aware that brackets should be mounted on TOP, LEFT, RIGHT and BOTTOM sides. Note that the [B] bracket is different than the [A] brackets and mounted near the connectors. See closeup of details.



3: Secure each bracket with the provided M5x16 screws and C-Washers as illustrated below. Make sure you do it equally and even for all 4 sides. Do not use excessive force. 2 screws and 2 washers pr. bracket. Note the orientation of brackets before you begin.



4: Review closeup of the mounting of brackets with screws and C-Washers in place. Seen from bottom side.

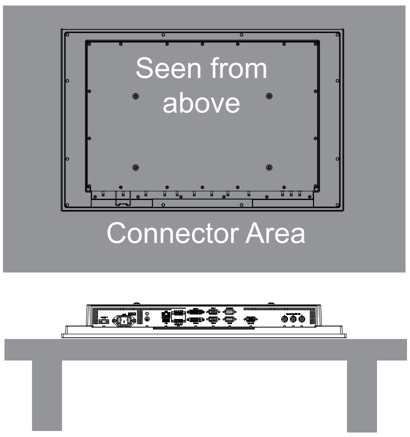


Mounting Bracket for Table / Desktop installation - 24”,26”

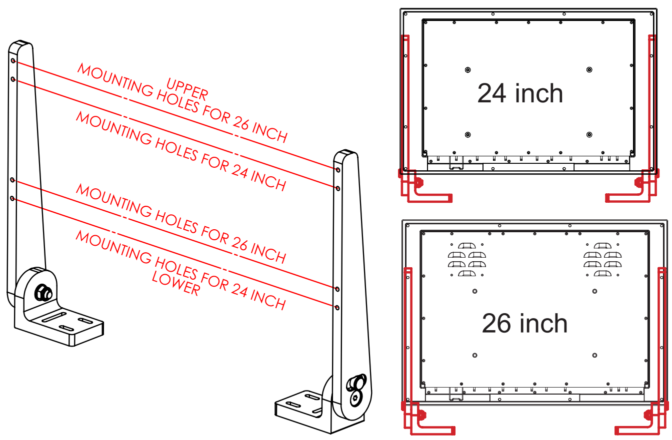
You need: M5, M10 Unbrako® Hex Key tool, M10 Wrench and 1 pcs of HD TMB SX1-C1 Mounting Bracket Kit. Fasteners (6 pcs M6) for Table / Desktop location not included. Procedure suitable for: Display and Panel Computers.

Attention: A suitable pre-drilled location and knowledge of measurements for both main unit and brackets/tilting functionality should be prepared and checked prior to mounting. Please disconnect ALL cables before proceeding. Please review User Manual or visit www.hatteland-display.com for Technical Drawings regarding measurements for both main unit and Mounting Brackets.

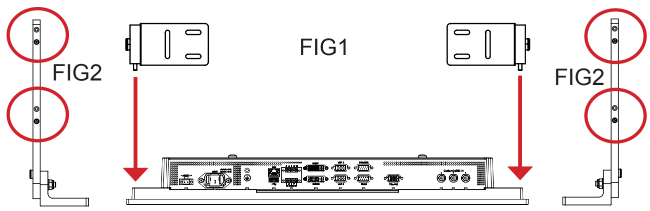
1: Place the unit on a dry, flat, clean, soft surface (i.e. table) with the glass front facing down as illustrated. Connector area should be facing downwards from you.



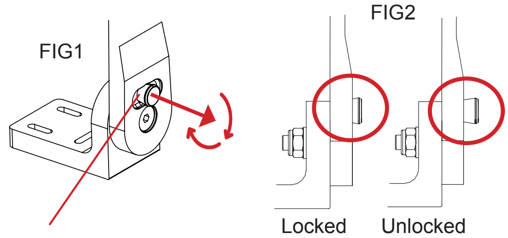
2: Inspect the mounting holes of brackets. For mounting to a 24 inch unit, please use the **lower holes** as indicated. For mounting to a 26 inch unit, please use the **upper holes** as indicated.



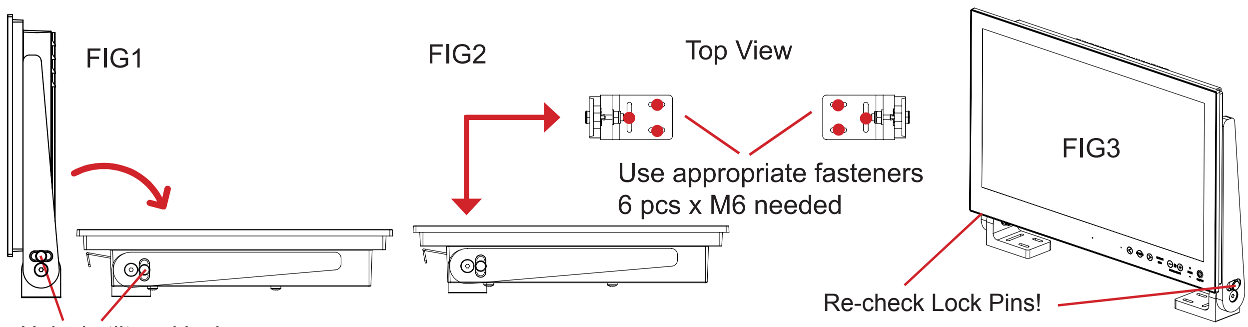
3: Place one bracket at the time with the mounting holes facing down into the suitable mounting position and fasten with 2 x M5 screws on each bracket.



4: While unit is lying flat on table, check the Tilting Lock Pin position. These can be pulled out by hand, turned 90° (FIG1) and turned back 90° until the Lock Pin automatically clicks into place by a spring (FIG2).



5: You may now mount the unit onto your desired location. It is advised that you unlock the Lock Pin (as shown in step 4), tilt the unit 90° backwards (FIG1) and properly fasten the bracket base into location (FIG2).
NB! Be careful not to break or scratch the edge of the front glass! Then repeat step 4 again until your desired tilting position has been achieved and you have verified that the Lock Pin are in locking position and the unit is firmly attached and does not appear loose (FIG3).



Mounting Bracket, Table / Desktop / Ceiling - 12”,15”,17”,19”

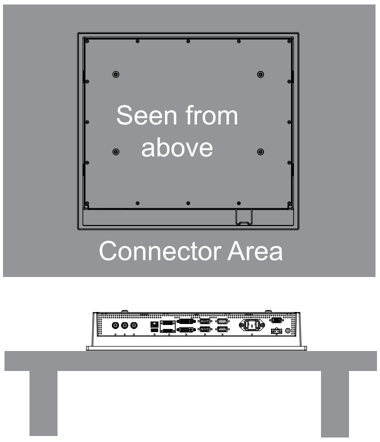
Procedure suitable for: Display (MMD/STD) and Panel Computer (MMC) Series X product ranges.

You need:
- M4, M5, M10 Unbrako® Hex Key tool, M10 Wrench (not included with delivery).
- Fasteners (6 pcs M6) for mounting complete unit onto table or desktop location (not included with delivery).
- 1 pcs of HD xxBRD SX1-A1 Mounting Bracket Kit, where xx=12, 15, 17 or 19 inch (shipped during 2012 > 2013)*
- or 1 pcs of HD TMB SX1-A1 (12” / 15”) or HD TMB SX1-B1 (17” / 19”) Mounting Bracket Kit (shipped during 2013 >)*

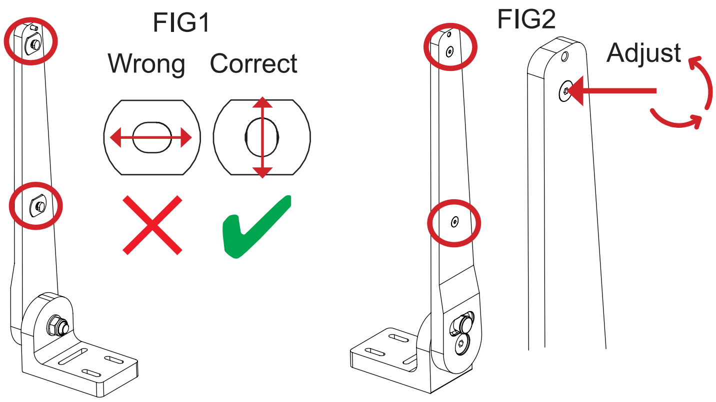
Bracket Arms are clearly marked with Typenumber label so you can identify which version you have (BRD or TMB).
Ceiling mount of complete unit is only supported for “Double Key Hole” units, see next page for infomation.

Attention: A suitable pre-drilled location and knowledge of measurements for both main unit and brackets/tilting functionality should be prepared and checked prior to mounting. Please disconnect ALL cables before proceeding. Please review User Manual or visit www.hatteland-display.com for Technical Drawings regarding measurements for both main unit and Mounting Brackets.

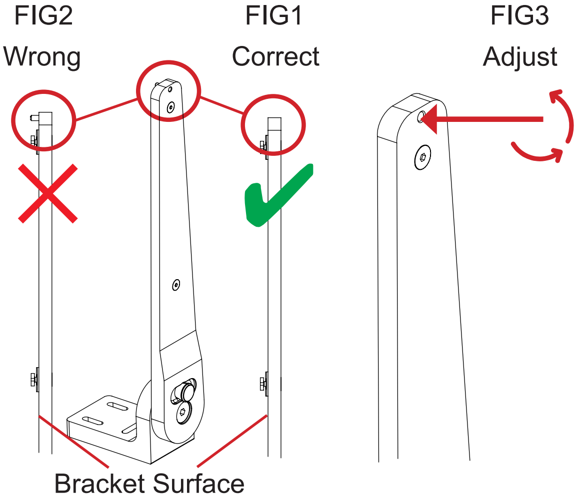
▼ 1: Place the unit on a dry, flat, clean, soft surface (i.e. table) with the glass front facing down as illustrated. Connector area should be facing downwards from you.



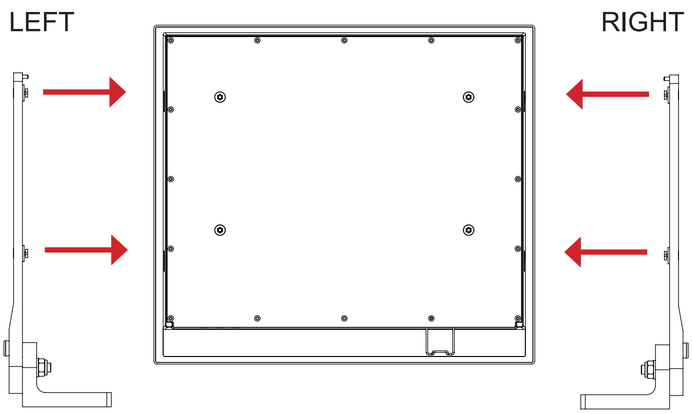
▼ 2: Inspect the inner side of both brackets and especially the orientation of the Key Hole Plug (4 pcs). They should be shaped as an standing “egg” to ensure proper fitting in the Key Hole of unit (FIG1). Note: You may have to loose the fastening screw (M5) (FIG2) if the Key Hole Plug can not be turned by hand.



▼ 3: Verify that the Key Hole Set Screw (M4) is aligned with the bracket surface (FIG1). If this screw appear too far out (FIG2), proper fitting into the Key Hole can not be completed. Turn screw clockwise or anti-clockwise (FIG3) to adjust the position. (BRD version only, not present on TMB version).

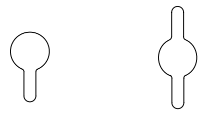


▼ 4: Notice the indication of LEFT and RIGHT. The mounting bracket (2 pcs) is marked with respective stickers “L” and “R” from factory. Please make sure that LEFT bracket is positioned on LEFT side and RIGHT bracket is positioned on the RIGHT side as shown below.



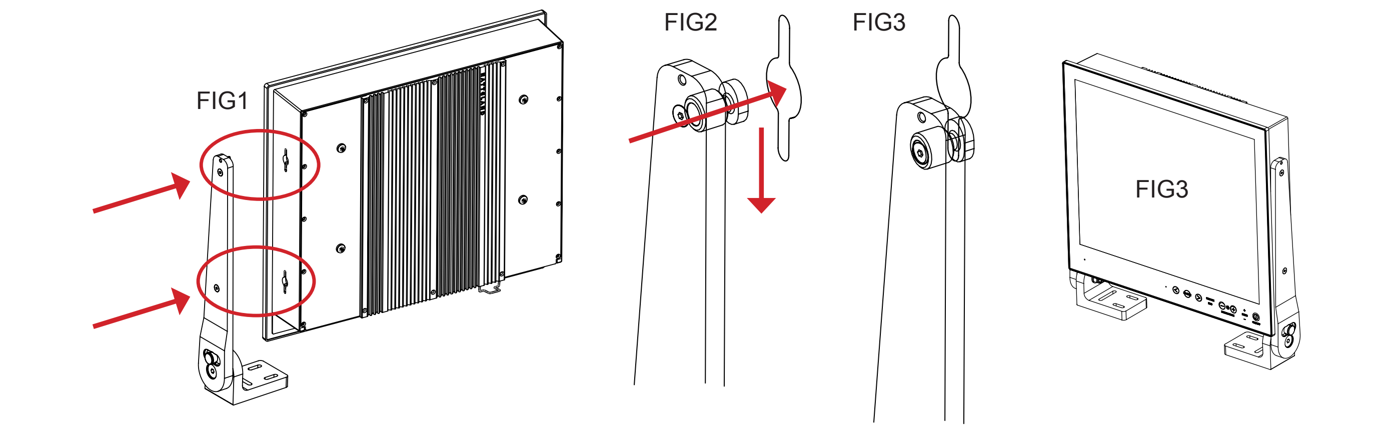
Installation Procedures

Note: Some units may have Single Key Hole, whilst others have Double Key Hole (Point 5, FIG2/3 in table below) present in the chassis side. This is due to slight variation in initial production vs Mass Production throughout 2012/2013. During early/mid 2013, all units will feature Double Key Hole. Illustration to the right shows Single Key and Double Key cut-out.

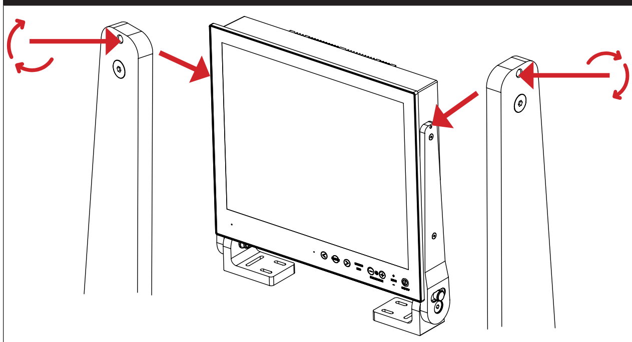


Caution:
Single Key hole units <u>does not</u> support ceiling mount. Double Key Hole <u>supports</u> ceiling mount of unit.

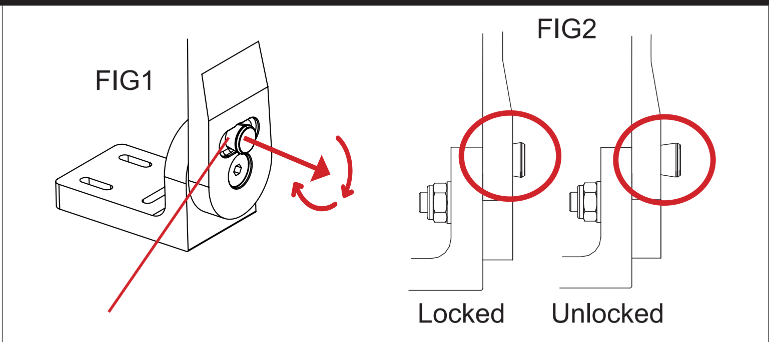
▼ 5: Ensure that both Key Hole Plugs slide into the Key Holes and goes to the bottom position (FIG1 and FIG2). If they appear too tight, you may loose the Key Hole Plug screw a few turns and re-try (see previous step 2). FIG3 shows Key Hole Plug correctly into Key Hole and both brackets in place.



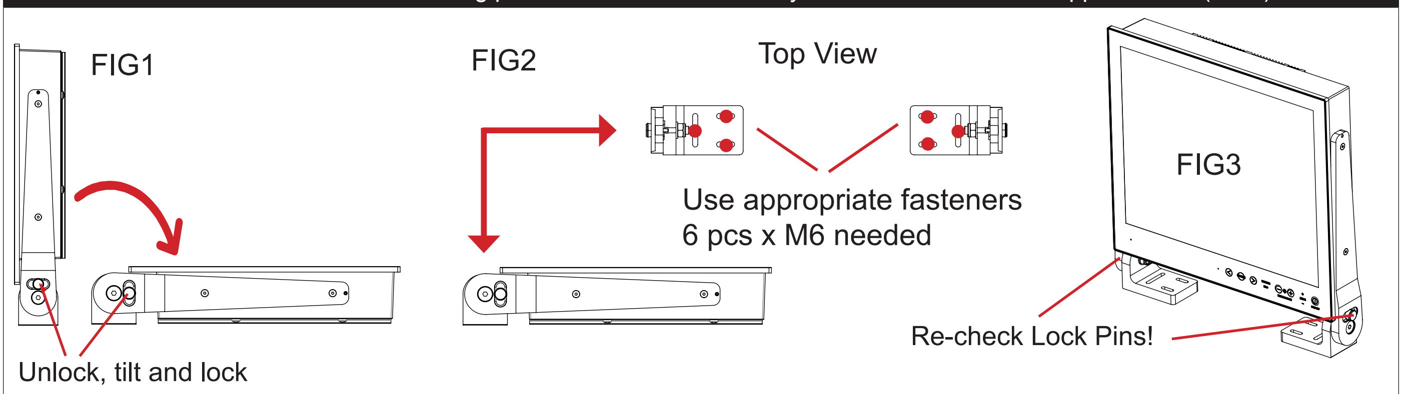
▼ 6: Tighten Key Hole Screw firmly on each side and make sure the brackets are properly mounted and aligned to the main chassis of unit. Verify with your hands that both brackets are firmly attached.
(BRD version only, not present on TMB version).



▼ 7: While unit is lying flat on table, check the Tilting Lock Pin position. These can be pulled out by hand, turned 90° (FIG1) and turned back 90° until the Lock Pin automatically clicks into place by a spring (FIG2).

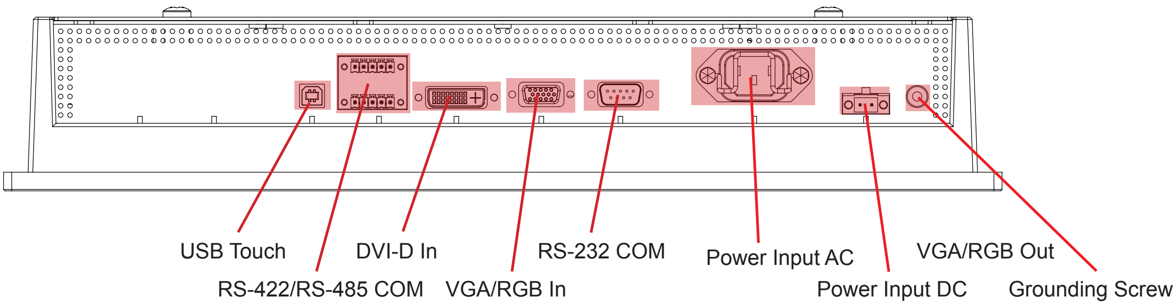


▼ 8: You may now mount the unit onto your desired location. It is advised that you unlock the Lock Pin (as shown in step 7), tilt the unit 90 degrees backwards (FIG1) and properly fasten the bracket base into location (FIG2). **NB! Be careful not to break or scratch the edge of the front glass!** Then repeat step 7 again until your desired tilting position has been achieved and you have verified that the Lock Pin are in locking position and the unit is firmly attached and does not appear loose (FIG3).



Physical Connections

Connection area of unit (illustration)

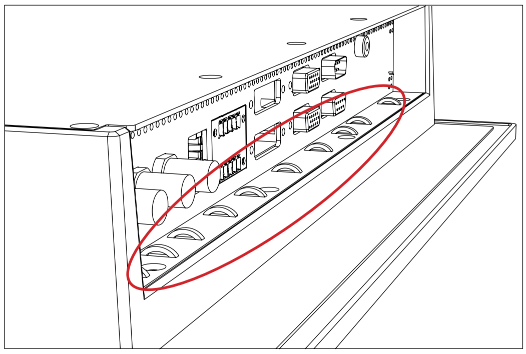


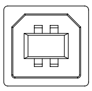
Note: 19 inch unit used as example above, please review specifications for your actual model.

Reduce Cable Tension

To reduce tension of the cables you connect, secure them with a cable tie to the available chassis hinges located near the connectors.

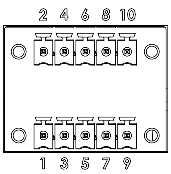
Note: Amount of chassis hinges can vary depending on model.





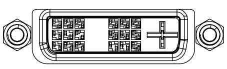
USB TOUCH:

Connect a TYPE B USB Cable between this connector and your PC. Suitable drivers to install and calibrate the touchscreen are available on the separate installation media delivered with the unit. Port is USB2.0 (<5m).



RS-422 / RS-485 COM I/O:

The COM (non-isolated RS-422/485) allows functionality to communicate with serial based equipment including external buzzer functionality. Connect and fasten your cables from your compatible external equipment to the 5-pin Terminal Block 3.81 connector. Please review the “Pinout Assignments” chapter as well as “Housing / Terminal Block Connector Overview” in this manual for more information

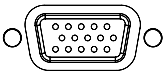


DVI-D IN:

Connect your DVI cable to the DVI-D 18+1P, Single Link Connector (female). Secure your DVI cable to the hex spacers provided on the unit and make sure you do not bend any of the pins inside the connector. Connect the other end of the cable to the DVI connector on your equipment and secure it.

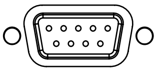
Important note for DVI signal detection:

Please note that for the operating system to detect DVI signals correctly, the DVI cable MUST be connected physically to the unit during boot up otherwise you may experience a black image. Furthermore certain graphics drivers may need to refresh their device list (often done manually by user - detect devices), while in some cases the Plug-n-Play will automatically detect the DVI signal correctly. Please consult your local technician if you have this behaviour of detection problems when using DVI. In all cases the problem can be solved in the operating system, and this is not a malfunction in the graphic controller for display units.



VGA/RGB IN:

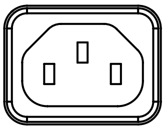
Connect your VGA cable to the D-SUB 15P Connectors (female). Secure the VGA cable to the hex spacers provided on the unit and make sure you do not bend any of the pins inside the connector when connecting. Connect the other end of the cable to the VGA connector on your equipment and secure it.



RS-232 COM I/O:

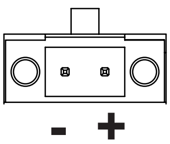
This 9P COM connector provides additional functionality for the unit. The Serial Remote Control features a RS-232 (non-isolanted) interface for controlling internal parameters like brightness. You can access most of the parameters available in the OSD menu and with special commands control the unit externally. This COM can also be used to upgrade the firmware for the graphic controller inside the unit which is available on request and through service channels (for qualified personnell only). Fasten your external cable to the D-SUB 9P Male connector using the provided screws on the cable housing.

Please review “Management Settings/Communication” in the “OSD Menu Functions” chapter for more information.



POWER INPUT:

The internal AC power module supports both 115VAC/60Hz and 230VAC/50Hz power input. Please check specifications for your unit.



POWER INPUT:

Connect your DC power cable to the 2-pin Terminal Block 5.08 connector. The internal DC power module supports 24VDC. For more information, please review “Housing Connector Overview” earlier in this manual.

GROUNDING SCREW:

Note: DC models are required / recommended to be properly grounded via the screw located on the unit. Please review "General Installation Chapter", pt. 7 for more information.

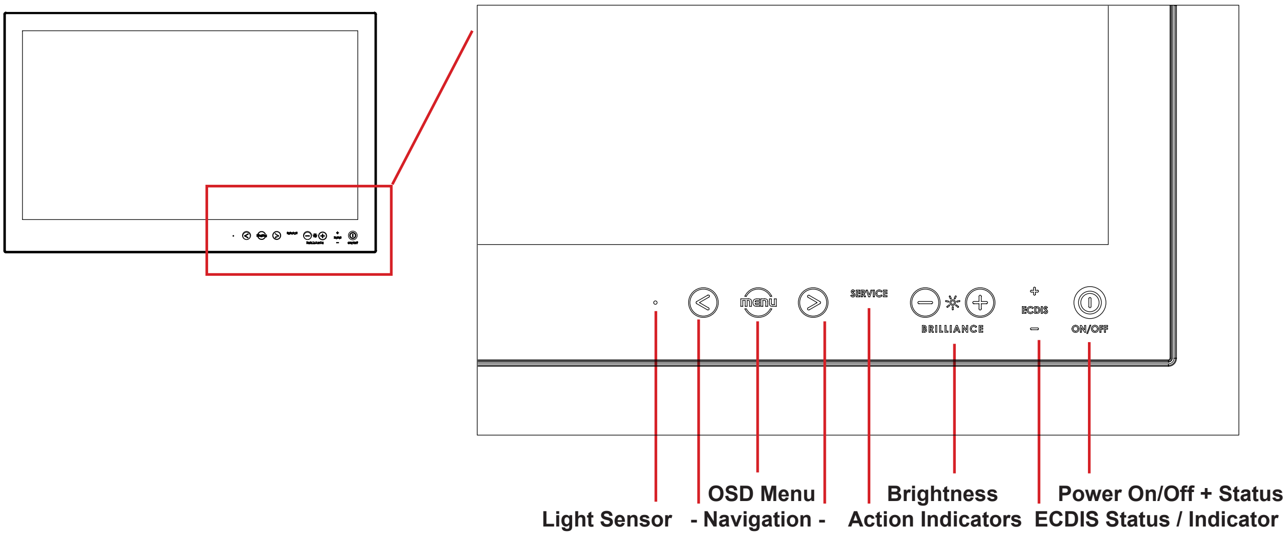
Multi-power note: (For units supporting AC & DC input simultaneously)

The unit has a dual input power supply which will accept both AC and DC input. If both inputs are connected, the unit will be powered by AC. If AC is disconnected it will automatically switch over to DC without affecting the operation of the unit. This makes it possible to use AC power as primary power and a 24V battery as secondary power, eliminating the need for expensive UPS systems.

Operation

USER CONTROLS OVERVIEW

The units are designed by using Glass Display Control™ (GDC) touch technology to allow interactivity adjusting brilliance (brightness) and control power on / off with the use of illuminated symbols. Note that these symbols are only visible (backlight illuminated) when suitable power is connected. There is no physical moving knobs, potmeters, wheels or push buttons available as everything is touch surface controlled by Projected Capacitive technology, that allows a human finger (including several types of gloves) to control the unit.





Power ON/OFF:

This symbol and all text will illuminate in red when suitable power is connected and the unit is turned off. When the unit is on and operating, this symbol will illuminate constantly either in yellow color (signal not recognized/not present and no image on screen) or green color (signal detected and image on screen).

Power ON:

To turn the unit on, verify that the symbol is illuminated in red (indicates suitable power is connected) and touch the power symbol and hold until the the symbol changes to green light/yellow light or a image appears on the screen.

Power OFF:

To turn the unit off, touch the power symbol and hold until it either illuminate/change from green/yellow to red or the image on screen disappears.



OSD Menu, Navigation and Hotkeys:

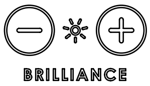
The “<” and “>” symbols has two functionalites. If the OSD (On Screen Display) menu was activated (and is cleary visible on screen), both the “<” and “>” are used to navigate and set options within the OSD menu. If the OSD menu is not activated (no OSD visible on screen), both the “<” and “> symbols function as hotkeys. To use the defined hotkeys assigned, touch the “<” or “>” symbols. The hotkey functionality can be changed or disabled by accessing the main On Screen Display (OSD) menu and the appropriate menu function. With Hotkey functionality you can define options from the OSD menu for easier control and everyday usage of the display unit.

To access the main OSD menu, touch anywhere on the “MENU” circle symbol and the OSD menu will clearly be seen as an overlay over the existing displayed image. The complete definition of all the menus and functions are available in the “OSD MENU FUNCTIONS” chapter in this manual.



Action Indicators:

SERVICE = Built in functionality to determine when the unit requires service in order to perform within preset factory standards. This area will illuminate constantly until the unit is powered off.
Note that by touching this symbol no action will be performed or has been assigned.



Brightness Adjust:

Brilliance / Brightness adjustment of the displayed image is adjusted by touching the (-) or (+) illuminated symbols. The entire area of text and symbols are visible as long as the unit is powered. Note that only the (-) and (+) are touch sensitive while the "*" and "BRILLIANCE" symbols are not. The symbols (-) and (+) are also used to change values in the OSD menu when its activated / function selected for adjusting.

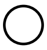


ECDIS Status / Indicator: (optional factory standard)

For units that has been factory ECDIS calibrated the text "ECDIS" will illuminate in green constantly as long as the unit is powered. The "+" and "-" symbols will illuminate in red when the Brightness/Brillance is adjusted either above or below ECDIS factory calibration point.

To be able to stay within ECDIS calibrated range, please assure that both the "+" and "-" are not illuminated and that "ECDIS" text remains illuminated during operation. Note that by touching these symbols no action will be performed or has been assigned.

Note: ECDIS functionality is only suitable for models above 15 inch.

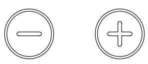
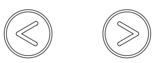


Light Sensor:

Used to sense level of ambient light in the surrounding environment. The sensor data can be read by suitable software through the Hatteland Display SCOM functionality of the unit and thus can be used to control brightness remotely. Note: This sensor is not visible for the eye or has any illumination behind to indicate it's position. Further, by touching or covering this area will naturally make the sensor data inaccurate.

Note:

In the following "On Screen Display (OSD)" menu chapter, these buttons are referenced as:

	"MENU"
	"(-) Brilliance (+)"
	"(<) Navigation (>)"

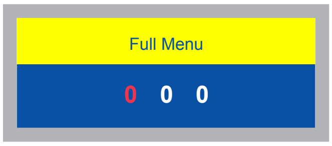
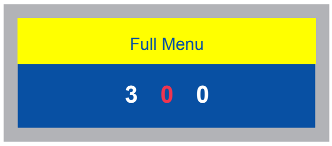
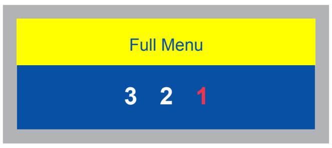
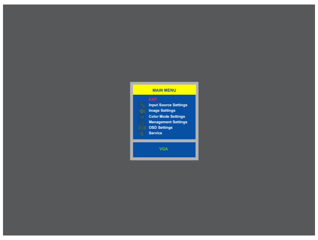
On Screen Display (OSD) Menu Introduction

The OSD menu consists of main menus and submenus which is very easy to navigate through. All functions are explained in-depth later in this user manual. You should prior to using the OSD menu and functions, be sure to familiarize yourself with how to physically access the menu, how to navigate up/down/left/right, how to modify values, exiting menus and more.

Please note: Factory default illustrations only! Available functions, icons and text may deviate slightly from actual OSD menu on your product due to different OSD software configurations and customized solutions.

OSD Keycode / OSD Lock Mode

During use, a small requester may pop-up on screen asking you for a 3 digit "Key Code". This is a safety feature (due to ECDIS Compliance) that might be predefined in your setup. To quickly understand how to enter a code, navigate and finally access the underlying main menu, simply follow the illustration below. The "Key Code" is by factory default **"321"**. If the "Key Code" requester do not appear on screen, you can skip reading this section for now and proceed to the next page.

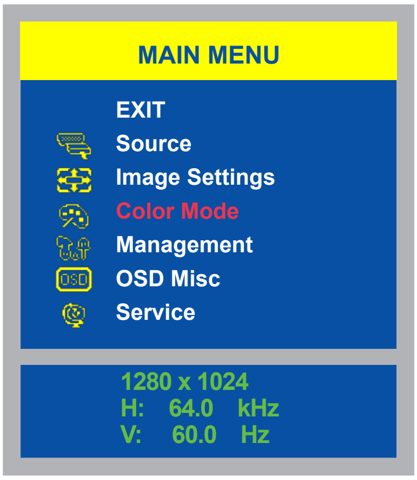
 Active Display Area + Requester	 Close-up of Requester	 Close-up of Requester
1: Typical position of requester on screen. Red number indicate number position, default loaction is always on first number.	2: Enter first number (from 0 to 9). Use "(-) Brilliance (+)" touch buttons to increase/decrease. Number change in real time.	3: Now touch "(<) Navigation (>)" right button to store first number and proceed to second number. You may use left button to go back editing the previous number if you like.
 Close-up of Requester	 Active Display Area + OSD Menu	
4: Repeat step 2 and 3, until "Key Code" reads "3 2 1" and finally touch menu button to continue.	5: The OSD menu appear in "Simplified" or "Full Menu" mode (if confgured to do so)	

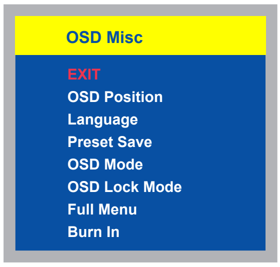
After the code was successfully entered you will gain access to the OSD Menu and a multitude of functions will be available for adjusting or reviewing. Please proceed to the next page, where you will learn the differences between "Simplified" and "Full" menu modes and a complete map of all the underlying functions available within.

OSD Menu Overview

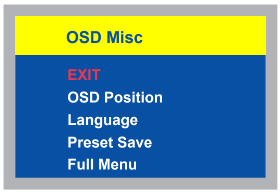
OSD Simplified and Full Menu modes (examples)

You may encounter two different menu setups based on factory default or by customized preset configuration. By first apperance they look the same at the main level, but the underlying sub-menus are slightly different. The Simplified Menu mode offers easy and clear access to most commonly used functions. The Full Menu mode offers a more advanced menu with technical information and is suited for more technical minded users.





Full Menu Illustration



Simplified Menu Illustration

OSD Menu showing for example “Color Mode” chosen in the menu. Each of these lines might have additional submenus where other lists of choices will be seen. Notice the green text information. This may change depending on the selected function.

Submenu where the difference between “Full” menu (top) and “Simplified” menu (bottom) is illustrated with less functions available. Notice that the height of menus will adjust based on content.

OSD Visual Feedback (examples)

Throughout all OSD menus there are certain symbols you need to familiarize yourself with. These are to visually indicate that a value can be increased/decreased, option by “radio” button style, display a Slide Bar Meter or just for information purposes only. A Slider Bar with number beside it will indicate the value has a minimum, current and max limit. All changes in values and lists happen in real time as you touch the menu button and/or touch navigation buttons.



Whenever a function is selected, the item will be visually indicated by text changes from white to red. The icon will remain in yellow color always.





“Radio Button” indicates the current state of this function, while the red text indicates the position of the cursor. To set a new assignment to the function, simply touch the “MENU” button for the red text function and the “radio button” will be moved to the selected red text function. Radio buttons only allows for 1 choice out of several choices shown.



Slider Bar meter indicates the “filling” up based on a minimum and maximum value. The current value is written to the left. These Slider Bar meters useally appear at the bottom of menus.



Text displayed in Green Color indicates to draw user’s attention towards information about an selected function or its current state. This information box useally appear the the bottom of menus.

Note: The examples above are the most common ones displayed. Your menu may have slight different style and colors, depending on firmware, variations and customized solutions, but the logic of operation is the same.

OSD Menu Overview

OSD Menu Structure

In this table all functions within menus and their submenus are shown. Functions that begins with an asterix (*) and in **bold/red font color** style indicates this function/menu is only available during “Full” menu mode. Some functions are not available for all signal sources due to industry standards and signal properties. Functions with a “>” in the end, indicates a submenu or list of options will be displayed. Depth of the sub-menus (levels) are identified from 1 to 5.

Source (page 40)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
Exit				
Source >	< Exit			
	VGA >	(Automatic Action)		
	DVI >	(Automatic Action)		
	Auto Source >	< Exit		
		Yes, No	(Radio Button)	

Image Settings (page 41-42)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
Image Settings >	< Exit			
	Auto Setup >	(Automatic Action)		
	*Black Level >	(Slider Bar)		
	*Contrast >	(Slider Bar)		
	Display >	< Exit		
		H.Position >	(Slider Bar)	
		V.Position >	(Slider Bar)	
		Clock >	(Slider Bar)	
		Phase >	(Slider Bar)	

Color Mode (page 43)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
Color Mode >	< Exit			
	Color Temperature >	< Exit		
		9300K >	(Radio Button)	
		8000K >	(Radio Button)	
		6500K >	(Radio Button)	
		*User >	< Exit	
			Red >	(Slider Bar)
			Green >	(Slider Bar)
			Blue >	(Slider Bar)
	Calibration Mode >	(Automatic Action)		

Management (page 44)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
Management >	< Exit			
	LED Drive >	(Slider Bar)		
	*Communication >	< Exit		
		RS232 >	(Radio Button)	
		2-wire RS485 >	(Radio Button)	
		4-wire RS485/422 >	(Radio Button)	
		Address RS >	(Slider Bar)	

OSD Misc (page 45,46,47)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
OSD Misc >	< Exit			
	OSD Position >	< Exit		
		OSD H Position >	(Slider Bar)	
		OSD V Position >	(Slider Bar)	
	Language >	< Exit		
		Norsk >	(Radio Button)	
		English >	(Radio Button)	
		Français >	(Radio Button)	
		Deutsch >	(Radio Button)	
		Italiano >	(Radio Button)	
		Español >	(Radio Button)	
		日本語 >	(Radio Button)	
		簡體中文 >	(Radio Button)	
	Preset Save >	< Exit		
		Recall >	(Automatic Action)	
		*Save >	< Exit	
			User 1 >	(Automatic Action)
		Load >	< Exit	
			User 1>	(Automatic Action)
	*OSD Mode >	< Exit		
		Simplified >	(Radio Button)	
		Full >	(Radio Button) and Enter Key Code “362”	
	*OSD Lock Mode >	Normal Mode >	(Radio Button)	
		Password Protect >	(Radio Button) and Enter Key Code “321”	
	Full Menu >	(Select and Enter Key Code “362”)		
	Burn In >	Factory / Internal use only.		

Service (page 48-49)

Level 1 (Main Menu)	Level 2	Level 3	Level 4	Level 5
Service >	< Exit			
	RAP Firmware >	(Text Displayed)		
	CYP Firmware >	(Text Displayed)		
	Operation Hours >	(Text Displayed)		
	Current Temp >	(Text Displayed)		
	Fault Status >	< Exit		
		NVRAM >	(Text Displayed)	
		DDC >	(Text Displayed)	
		TMP Sensor >	(Text Displayed)	
	Test Pattern >	(Automatic Action)		

OSD Menu Functions

The following section covers all possible settings that the user can (in a certain mode) encounter or needs to adjust via easy understandable menus, text and navigation. For simpler reading the menu choice **"Exit"** has been left out of description in this chapter intentionally. Whenever **"Exit"** is available, you can exit current menu and go back to the previous one visited. When there is no more previous menus available, the OSD menu overlay will be shut off and hidden. All settings are saved real-time or when you exit a menu (including timeout of menu visibility).

The number shown in the "|------x------" line gives the indication of the submenu level where the function is located (also reference to the table in the previous chapter). It requires the user to touch the "MENU" symbol to enter that submenu.

Please note: Available functions described may deviate slightly from actual OSD menu on your unit. This is due to different OSD software configurations and customized solutions. Shown here are factory standards.

Source

Lets you configure signal source input (DVI or VGA) as well as activate or disable the Auto Source functionality. The contents of these submenus are listed below.

|---2---

Source - VGA

Sets the signal source detection to "VGA" (Analog RGB/VGA).

|---2---

Source - DVI

Sets the signal source detection to "DVI" (Digital).

|---2---

Source - Auto Source

Set to either 'Yes' or 'No'. Signal is automatically searched for and selected. If any signal is disconnected physically, the video controller will automatically search and select from the next item available in the list, such as; "DVI" (Digital) or "VGA" (Analog RGB/VGA).

- Note: If all signals was physically disconnected from the unit, the Auto Source function will loop endlessly until it detects a valid signal to display.

Image Settings

Lets you configure various visual preferences for any signal. The contents of these submenu are listed below.

|---2--- **Image Settings - Auto Setup**

Will automatically fit / reset the current displayed full screen signal and center it based on the active area of the TFT display. This function rely on properties of the incoming signal.

● Note: Only applicable for “VGA” (Analog RGB/VGA) signals. Will override any manual adjustments done previously.

|---2--- **Image Settings - Black Level** *Available in “Full Mode” only

Increase/decrease the black level saturation (brightness) in real-time of the current displayed full screen signal. A visual slider in the OSD menu will show the current value. This value adjusts the TFT panel’s brightness by controlling the voltage feed.

● Note: Value adjustable from 0 to 100. 50 is factory default.

|---2--- **Image Settings - Contrast** *Available in “Full Mode” only

Increase/decrease the contrast in real-time of the current displayed full screen signal.

● Note: Value adjustable from 0 to 100. 50 is factory default.

|---2--- **Image Settings - Display**

Allows to adjust “VGA” (Analog RGB/VGA) signals Horizontally (left/right) and Vertically (up/down) and Clock and Phase within the TFT panel Active Area. Clock and Phase is suitable when the image seems to have a “waterfall / rolling bars” effect.

● Note: This function can move information in the image outside the visible TFT Active Area, so use caution when modifying this parameter. Try to determine the max end of borders (look at each corner) of the image before you proceed using this function.

|--------3-------- **Image Settings - Display - H.Position**

Settings as follows:

“H.Position” = Move image within the TFT panel active area Horizontally (left/right), values from 0 to 100.

● Note: Default value is centered inside the active TFT panel area.

|--------3--------

Image Settings - Display - V.Position

Settings as follows:

"V.Position" = Move image within the TFT panel active area Vertically (up/down), values from 0 to 100.

● Note: Default value is centered inside the active TFT panel area.

|--------3--------

Image Settings - Display - Clock

Adjust the horizontal frequency (clock) of the analog signal to improve visibility of the entire image. When it is adjusted, you will notice that the image will appear to be stretched and might in some situations start to flicker/scroll, at which point you must reverse the last adjustment to stop it from flickering/scrolling anymore. This function can be used for older signals that is not automatically detected by the internal display controller.

To adjust the Clock and Phase to a optimal setting it is recommended to display a image with alternating white and black lines by stepped by 1 pixels either vertically or horizontally. It is suggested to use a dedicated and external test pattern while adjusting.

|--------3--------

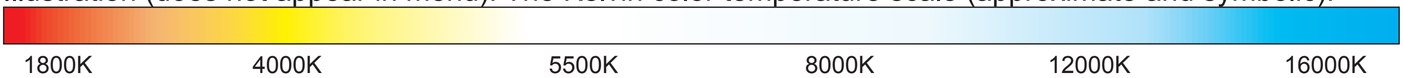
Image Settings - Display - Phase

Fine tune the data sampling position of the signal (impacts on image quality). This function will remove small transparent defects in typical characters where a portion seems to be more faint then the nearby black pixels. The faint pixels are always visible as a line from top to bottom (vertically). Note that this function is automatic and does not allow for manual values. It is suggested to use a dedicated and external test pattern while adjusting.

Color Mode

Lets you adjust the color temperature (Kelvin degrees) of the image. This applies to the Source signal only. OSD Menu overlay will be unaffected. Lower values make the image appear warmer, while higher values will make it appear cooler. The contents of these submenus are listed below.

Illustration (does not appear in menu): The Kelvin color temperature scale (approximate and symbolic):



|---2---

Color Mode - Color Temperature

Settings as follows:

“9300K”	= Cool, a blueish white.
“8000K”	= Neutral, a white close to natural light.
“6500K”	= Warm, a reddish white.

|--------3--------

Color Mode - Color Temperature - User *Available in “Full Mode” only

Allows individual adjustment of Red, Green and Blue color gains. The selected setting will be preserved for each signal input (DVI/VGA)

Settings as follows:

“Red”	= Adjust the Red Gain.
“Blue”	= Adjust the Green Gain.
“Green”	= Adjust the Blue Gain.

● Note: Value adjustable from 0 to 100. 50 is factory default.

Management

Allows you to adjust voltages for LED (which illuminate the front glass symbols) and setup Serial Communication mode. The contents of these submenus are listed below.

|---2--- **Management - LED Drive**

The touch enabled symbols available on the front glass of the unit is backlight illuminated by LED technology. If you have the need to adjust the brightness strength of these LED (to conform with Night Vision situations), you may do so by adjusting this value in real time.

Settings as follows:

"LED Drive" = Adjust values from 0 to 100.

- Note: Default is TBD

|---2--- **Management - Communication** ***Available in "Full Mode" only**

The unit allows for remote control (adjust brightness for example) and/or accessing internal information about the unit such as typenumber, serial number and more. To setup this feature, you first need to configure the Serial properly to match your external equipment specifications. The contents of the submenus is listed below.

Settings as follows:

"RS232" = Sets the internal communication to standard RS-232 protocol.

"2-wire RS485" = Sets the internal communication to RS-485 protocol (Half duplex).

"4-wire RS485/422" = Sets the internal communication to RS-485/422 protocol (Full duplex).

"Address RS" = Set the global unique channel/port ID for the unit (0-15 available).

- Note: Default mode is "RS232" protocol.

A more detailed description of the SCOM (Serial Communication) can be found here:
http://www.hatteland-display.com/pdflink/inb100018-4.php
Review also the "Pinout Assignments" chapter in this manual for additional help during preperation and/or installation of external equipment intended to communicate with.

OSD Misc

Allows you to customize the visual appearance of the On Screen Display (OSD) menu, such as; position, language, save, load and recall favourite settings and more. The contents of these submenus are listed below.

|---2--- **OSD Misc - OSD Position**

Settings as follows:

"OSD H.Position" = Place the OSD menu overlay Horizontally (left/right), values from 0 to 100.

"OSD V.Position" = Place the OSD menu overlay Vertically (up/down), values from 0 to 100.

● Note: Default position of the OSD menu overlay is in the lower left corner of the of the Active Display area. Default value for both functions is 100.

|---2--- **OSD Misc - Language**

Available OSD language to be used for all text and warnings that may appear.

Settings as follows:

"Norsk" = Display OSD in Norwegian.
"English" = Display OSD in English.
"Français" = Display OSD in French.
"Deutsch" = Display OSD in German.
"Italiano" = Display OSD in Italian.
"Español" = Display OSD in Spanish.
"日本語" = Display OSD in Japanese.
"簡體中文" = Display OSD in Simplified Chinese.

● Note: Default language is English.

|---2--- **OSD Misc - Preset Save**

Allow to work with Memory Presets (Recall/Save/Load) for OSD menu settings and overlays. The contents of the submenu is listed below.

Settings as follows:

"Recall" = Reset back to factory defaults. Will override and restore all previous modified settings.

|--------3-------- **OSD Misc - Presets - Save** ***Available in "Full Mode" only**

Allows to save current state of all function and values to user defined presets. The contents of the submenu is listed below.

Settings as follows:

"User 1" = Save all OSD settings to User 1 slot.

|--------3-------- **OSD Misc - Presets - Load**

Allows to save current state of all function and values to user defined presets. The contents of the submenu is listed below.

Settings as follows:

"User 1" = Load all OSD settings from User 1 slot.

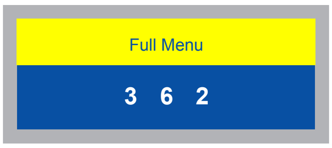
|---2--- **OSD Misc - OSD Mode** ***Available in "Full Mode" only**

Configuring the OSD Mode to show as simplified/most common functions or advanced (full) setup. The change you do here will be stored in memory and stays as such even after powering off the unit.

Settings as follows:

"Simplified" = A few functions is not visible/available in this state. For most uses this is the preferred setting and are safe for the display functionality and continuous trusted operation on the unit.

"Full" = All functions and parameters is visible/available in this state. Some of the settings adjusted could impact on display functionality and image quality. Only experienced and qualified personnel should access and change parameters when in this mode. Also, more technical details about signals, frequency will be available. The layout of the OSD menu will also change to a slightly bigger window with more menus and functions available.



- Note: When requesting a "Full" mode from a Simplified mode, the user are required to enter a key code. This code is factory preset to "362". You can enter the code by using navigation, (-) Brilliance (+) and "MENU" to confirm. After a successful entering of the key code, the OSD menu will always be in this state (even after power off). To revert back to "Simplified" mode, simply change it back and exit the OSD menu.

|---2--- **OSD Misc - OSD Lock Mode** ***Available in “Full Mode” only**

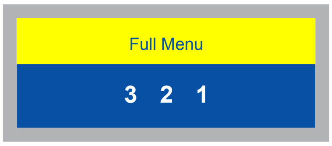
To prevent accidental or unwanted user intervention, you can set the behaviour of how the OSD menu is accessible by the user. Normally it is by factory default accessible by touching the MENU” symbol on the front glass of the unit.

Settings as follows:

“Normal Mode” = Default accessible pop-up by touching the “MENU” symbol.
For Non-ECDIS Compliant usage.

“Password Protect” = Ask for key code first (321). Required for ECDIS Compliance.

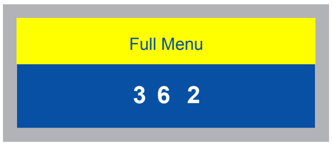
Example illustration of key code requester:



|---2--- **OSD Misc - Full Menu** ***Available in “Simplified Mode” only**

Configuring the OSD Mode to show as advanced (full) setup. All commands available for user during a one-time session. After the OSD disappeared (due to inactivity/timeout) the OSD menu will be reverted back to its initial state prior to the change.

Example illustration of key code requester:



- Note: When requesting a “Full” mode from a Simplified mode, the user are required to enter a key code. This code is factory preset to “362”. You can enter the code by using navigation, (-) Brilliance (+) and “MENU” to confirm.

|---2--- **OSD MIsc - Burn In** ***Factory / Internal Use only**

Sets the unit into “Burn In” mode and enables to write EDID data.
Only suitable for factory / Internal Use

Service

Will show various technical and unit related information, such as; Firmware versions, Elapsed Time, Internal Temperature, Fault Status and activation for the internal Test Pattern image useful for trouble-shooting. Whenever you are in contact with helpdesk or service personnel, they might require you to read back some of these values in order to precisely pinpoint any problem/question you should have with the unit or its functionality.

Information blocks as follows:

"RAP Firmware Rev" = Displays the firmware version of the RAP videocontroller. Example: "RAP120106R0V01"

"CYP Firmware Rev" = Displays the firmware version of the touch enabled buttons. Example: "TBC120105R0V01"

"Operation Hours" = Shows the time elapsed in hours since first-time power on. Example: "180 Hrs"

"Current Temperature" = Shows the internal temperature measured by onchip sensor. Example: "+27 C", in Celcius Degrees.

|---2---

Service - Fault Status

Will show detected Fault Staus by measuring various internal values during unit operation. Status is stated as either "OK" or "FAULT".

Fault Status as follows:

"NVRAM" = Status for Non-volatile random-access memory, used to store parameters and settings.

"DDC" = Status for TFT panel specifications (EDID data) and DDC (Display Data Channel). It is to make sure the TFT panel's specifications can be detected succesfully by the display controller software. This can be used in trouble-shooting situations to determine that the display are not or are the reason for a faulty or undesirable operation. The problem may be from external equipment.

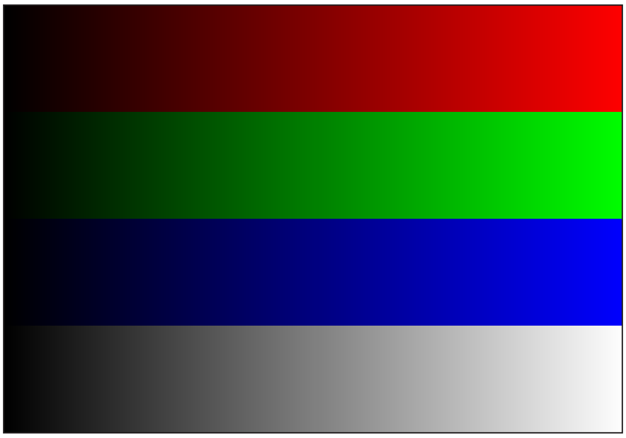
"TMP Sensor" = Status for internal temperature measured by onchip sensor.

|---2---

Service - Test Pattern

Will show the internal test pattern with shading color boxes for Red, Green, Blue and Black/White (Grayscale) to check for deviations in the TFT panel/display controller behaviour. It is independent of any current resolution or specifications found in the signal inputs. The test pattern is generated internally in the display controller and is sent 1:1 directly to the TFT panel. It can be useful during trouble-shooting situations to determine the source of a display or connectivity problem regarding external equipment.

To active this function simply touch the “MENU” button.



- Note: This function will not inform/report any deviations directly, you need to have the required technical expertise to interpret the test pattern displayed.

This page left intentionally blank

Specifications

TFT Technology:

- High Quality TFT with LED Backlight
- 12.1 inch viewable image size, Aspect Ratio 4:3
- TFT active-matrix liquid crystal panel

TFT Characteristics:

- Native Resolution : 1024 x 768
- Pixel Pitch (RGB) : 0.24 (H) x 0.24 (V) mm
- Response Time Standard : 35ms (typical), black to white
- Contrast Ratio Standard : 700:1 (typical)
- Light Intensity Standard : 500 cd/m² (typical)
- Viewable Angle Standard : +/- 80 deg. (Up/Down/Left/Right) (typical)
- Active Display Area : 245.76 (H) x 184.32 (V) mm
- Max Colors : 16.7 million

Synchronization:

- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> XGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:
- Horizontal : 31,5 kHz to 91,1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:

Resolutions:
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768*

** Recommended for optimal picture quality*

Power Specifications:

Multi-power Supply:
- 115&230VAC - 50/60Hz + 24 VDC - HD 12T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:
- Operating : 60W (max) - 15W (typ)

Physical Considerations:

- 314.00 (W) x 272.00 (H) x 64.50 (D) mm
- 12.36" (W) x 10.71" (H) x 2.54" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: 3.7kg / 8.1lbs

Signal Terminals:

- DVI-D Signal IN : 1 x 24p DVI (female)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated
- If Touchscreen : 1 x USB TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

User Controls:

Behind front bezel - Glass Display Control™ (GDC) IP66:
- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode/Status Indicator (Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:

- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity up to 95%
- IP Rating : Protection: IP66 front - IP22 rear (EN60529)

Safety Considerations:
Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:

- HD CMB SX1-A1 : 1 x Console Mount Kit
- HD 12BRD SX1-A1 : 1 x Mounting Bracket
- HD TMB SX1-A1 : 1 x Table Mount Bracket. EN60945 Tested*
- HD VED SX1-A1 : 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:

- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology

* Release date to be confirmed. Please contact us for more information.

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 12T21 STD-xxx-Fxxx Standard: 125cm Steering: 75cm

APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002)	**IACS E10**	**ClassNK** - Nippon Kaiji Kyokai
GL - Germanischer Lloyd	**DNV** - Det Norske Veritas	**ABS** - American Bureau of Shipping
CCS - China Classification Society (Pending)	**BV** - Bureau Veritas	**LRS** - Lloyd's Register of Shipping (Pending)

TFT Technology:
- High Quality TFT with LED Backlight
- 15.0 inch viewable image size, Aspect Ratio 4:3
- TFT active-matrix liquid crystal panel

TFT Characteristics:
- Native Resolution : 1024 x 768
- Pixel Pitch (RGB) : 0.297 (H) x 0.297 (V) mm
- Response Time : 8ms (typical), black to white
- Contrast Ratio : 700:1 (typical)
- Light Intensity : 400 cd/m² (typical)
- Viewable Angle : +/- 80 deg. (Up/Down/Left/Right) (typical)
- Active Display Area : 304.1 (H) x 228.1 (V) mm
- Max Colors : 16.7 million

Synchronization:
- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> XGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:
- Horizontal : 31.5 kHz to 91.1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:
Resolutions:
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768*

** Recommended for optimal picture quality*

Power Specifications:
Multi-power Supply:
- 115&230VAC - 50/60Hz + 24 VDC - HD 15T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:
- Operating AC/DC : 60 W (max) TBC

Physical Considerations:
- 356.00 (W) x 307.00 (H) x 71.50 (D) mm
- 14.02" (W) x 12.09" (H) x 2.81" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: TBD kg (approx)

Signal Terminals:
- DVI-D Signal IN : 1 x 24p DVI (female)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated
- If Touchscreen : 1 x USB TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

User Controls:
Behind front bezel - Glass Display Control™ (GDC) IP66:
- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode/Status Indicator (Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:
- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity up to 95%
- IP Rating : Protection: IP66 front - IP22 rear (EN60529)

Safety Considerations:
Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:
- HD CMB SX1-A1 : 1 x Console Mount Kit
- HD 15BRD SX1-A1 : 1 x Mounting Bracket
- HD TMB SX1-A1 : 1 x Table Mount Bracket. EN60945 Tested*
- HD VED SX1-A1 : 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:
- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology

* Release date to be confirmed. Please contact us for more information.

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 15T21 STD-xxx-Fxxx Standard: 55cm Steering: 40cm

APPROVALS & CERTIFICATES
This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002)
GL - Germanischer Lloyd
CCS - China Classification Society (Pending)
IACS E10
DNV - Det Norske Veritas
BV - Bureau Veritas
ClassNK - Nippon Kaiji Kyokai
ABS - American Bureau of Shipping
LRS - Lloyd's Register of Shipping (Pending)

TFT Technology:
- High Quality TFT with LED Backlight
- 17.0 inch viewable image size, Aspect Ratio 5:4
- TFT active-matrix liquid crystal panel

TFT Characteristics:
- Native Resolution : 1280 x 1024
- Pixel Pitch (RGB) : 0.264 (H) x 0.264 (V) mm
- Response Time : 5ms (typical), "black" to "white"
- Contrast Ratio : 1000:1 (typical)
- Light Intensity : 350 cd/m² (typical)
- Viewable Angle : +/- 80 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 337.92 (H) x 270.336 (V) mm
- Max Colors : 16.7 million

Synchronization:
- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> SXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:
- Horizontal : 31.5 kHz to 91.1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:
Resolutions:
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768
- SXGA : 1280 x 1024*

** Recommended for optimal picture quality*

Power Specifications:
Multi-power Supply:
- 115&230VAC - 50/60Hz + 24 VDC - HD 17T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:
- Operating AC/DC : 22W (typ) - 60W (max)

Physical Considerations:
- 390.00 (W) x 351.00 (H) x 73.50 (D) mm
- 15.35" (W) x 13.82" (H) x 2.89" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: 5.8kg / 12.8lbs

Signal Terminals:
- DVI-D Signal IN : 1 x 24p DVI (female)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated
- If Touchscreen : 1 x USB TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

User Controls:
Behind front bezel - Glass Display Control™ (GDC) IP66:
- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode Status Indicators (ECDIS, Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:
- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity up to 95%
- IP Rating : Protection: IP66 front - IP22 rear (EN60529)

Safety Considerations:
Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:
- HD CMB SX1-A1 : 1 x Console Mount Kit
- HD 17BRD SX1-A1 : 1 x Mounting Bracket
- HD TMB SX1-B1 : 1 x Table Mount Bracket. EN60945 Tested*
- HD VED SX1-A1 : 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:
- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology
- Color Calibrated models (ECDIS)

* Release date to be confirmed. Please contact us for more information.

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 17T21 STD-xxx-Fxxx Standard: 80cm Steering: 50cm

APPROVALS & CERTIFICATES
This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002)
GL - Germanischer Lloyd
CCS - China Classification Society (Pending)
IACS E10
DNV - Det Norske Veritas
BV - Bureau Veritas
ClassNK - Nippon Kaiji Kyokai
ABS - American Bureau of Shipping
LRS - Lloyd's Register of Shipping (Pending)

Specifications - HD 19T21 STD-xxx-Fxxx

TFT Technology:
- High Quality TFT with LED Backlight
- 19.0 inch viewable image size, Aspect Ratio 5:4
- TFT active-matrix liquid crystal panel
- MVA (Multi-domain Vertical Alignment) LCD Technology

TFT Characteristics:
- Native Resolution : 1280 x 1024
- Pixel Pitch (RGB) : 0.294 (H) x 0.294 (V) mm
- Response Time : 20ms (typical), "black" to "white"
- Contrast Ratio : 1000:1 (typical)
- Light Intensity : 300 cd/m² (typical)
- Viewable Angle : +/- 89 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 376.32 (H) x 301.056 (V) mm
- Max Colors : 16.7 million

Synchronization:
- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> SXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:
- Horizontal : 31.5 kHz to 91.1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:

Resolutions:
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768
- SXGA : 1280 x 1024*

** Recommended for optimal picture quality*

Power Specifications:

Multi-power Supply:
- 115&230VAC - 50/60Hz + 24 VDC - HD 19T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:
- Operating AC/DC Standard : 33W (typ) - 125W (max)

Physical Considerations:
- 429.00 (W) x 382.00 (H) x 74.50 (D) mm
- 16.89" (W) x 15.04" (H) x 2.93" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: 7.8kg / 17.2lbs

Signal Terminals:
- DVI-D Signal IN : 1 x 24p DVI (female)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated
- If Touchscreen : 1 x USB TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

User Controls:

Behind front bezel - Glass Display Control™ (GDC) IP66:
- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode Status Indicators (ECDIS, Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:
- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity up to 95%
- IP Rating : Protection: IP66 front - IP22 rear (EN60529)

Safety Considerations:

Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:
- HD CMB SX1-A1 : 1 x Console Mount Kit
- HD TMB SX1-B1 : 1 x Table Mount Bracket. EN60945 Tested*
- HD VED SX1-A1 : 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:
- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology
- Color Calibrated models (ECDIS)

* Release date to be confirmed. Please contact us for more information.

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 19T21 STD-xxx-Fxxx Standard: 125cm Steering: 75cm

APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002)
GL - Germanischer Lloyd
CCS - China Classification Society (Pending)
IACS E10
DNV - Det Norske Veritas
BV - Bureau Veritas
ClassNK - Nippon Kaiji Kyokai
ABS - American Bureau of Shipping
LRS - Lloyd's Register of Shipping (Pending)

Specifications - HD 24T21 STD-xxx-Fxxx

TFT Technology:

- High Quality TFT with LED Backlight
- 24.0 inch viewable image size, Widescreen, Aspect Ratio 16:9
- TFT active-matrix liquid crystal panel, RGB vertical stripe
- MVA (Multi-domain Vertical Alignment) LCD Technology

TFT Characteristics:

• Native Resolution	: 1920 x 1080 (FHD)
• Pixel Pitch (RGB)	: 0.276 (H) x 0.276 (V) mm
• Response Time	: 25 ms (typical), "black" to "white"
• Contrast Ratio	: 3000:1 (typical)
• Light Intensity	: 300 cd/m² (typical)
• Viewable Angle	: +/- 89 deg. (typical) (Up/Down/Left/Right)
• Active Display Area	: 531.36 (H) x 298.89 (V) mm
• Max Colors	: 16.7 million

Synchronization:

- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> WUXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:

- Horizontal : 31.5 kHz to 91.1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:

Resolutions:

• VGA	: 640 x 480 (including 640 x 350)
• SVGA	: 800 x 600 (including 720 x 400)
• XGA	: 1024 x 768
• SXGA	: 1280 x 1024
• UXGA	: 1600 x 1200
• FHD	: 1920 x 1080*
• WUXGA	: 1920 x 1200

** Recommended for optimal picture quality*

Power Specifications:

Multi-power Supply:

- 115&230VAC - 50/60Hz + 24 VDC - HD 24T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:

- Operating AC/DC: 40W (typ) - 125W (max)

Physical Considerations:

- 593.00 (W) x 384.00 (H) x 70.00 (D) mm
- 23.35" (W) x 15.12" (H) x 2.76" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: TBD kg

Signal Terminals:

• DVI-D Signal IN	: 1 x 24p DVI (female)
• RGB Signal IN	: 1 x 15p HD D-SUB (female)
• SCOM RS-422/485	: 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
• SCOM RS-232	: 1 x 9p D-SUB (female) non-isolated
• If Touchscreen	: 1 x USB TYPE B Connector (female)
• AC Power IN	: 1 x Std IEC Inlet
• DC Power IN	: 1 x 2-pin Terminal Block 5.08

User Controls:

Behind front bezel - Glass Display Control™ (GDC) IP66:

- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right) , Mode Status Indicators (ECDIS, Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:

- Operating : Temperature -15 deg. C to +55 deg. C
  Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  Humidity up to 95%
- IP Rating : Protection: IP66 front – IP22 rear (EN60529)

Safety Considerations:

Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:

• HD CMB SX1-B1	: 1 x Console Mount Kit
• HD TMB SX1-C1	: 1 x Table Mount Bracket. EN60945 Tested
• HD VED SX1-A1	: 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:

- Projected Capacitive Touch Screen (Multitouch, USB interface)
- Optical Bonding Technology
- Color Calibrated models (ECDIS)

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 24T21 STD-xxx-Fxxx Standard: 125cm Steering: 75cm

APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

IEC 60945 4th (EN 60945:2002)
GL - Germanischer Lloyd
CCS - China Classification Society (Pending)
IACS E10
DNV - Det Norske Veritas
BV - Bureau Veritas
ClassNK - Nippon Kaiji Kyokai
ABS - American Bureau of Shipping
LRS - Lloyd's Register of Shipping (Pending)

Specifications - HD 26T21 STD-xxx-Fxxx (LED/CCFL version)

TFT Technology:
- High Quality TFT with LED or CCFL Backlight
- 25.54 inch viewable image size, Widescreen, Aspect Ratio 16:10
- S-MVA, Active Matrix, Thin Film Transistor (TFT)
- RGB Vertical Stripe

TFT Characteristics:
- Native Resolution : 1920 x 1200
- Pixel Pitch (RGB) : 0.2865 (H) x 0.2865 (V) mm
- Response Time (CCFL) : 8 ms (typical), "gray" to "gray"
- Response Time (LED) : 20ms (Tr+Tf)
- Contrast Ratio : 1500:1 (typical)
- Light Intensity : 350 cd/m^2 (typical)
- Viewable Angle : +/- 88 deg. (typical) (Up/Down/Left/Right)
- Active Display Area : 550.08 (H) x 343.8 (V) mm
- Max Colors : 16.7 million

Synchronization:
- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> WUXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p
  : Input Impedance 75 Ohm

Synchronization Range:
- Horizontal : 31.5 kHz to 91.1 kHz
- Vertical : 60 Hz* to 85 Hz

** Recommended for optimal picture quality*

Supported Signals:
Resolutions:
- VGA : 640 x 480 (including 640 x 350)
- SVGA : 800 x 600 (including 720 x 400)
- XGA : 1024 x 768
- SXGA : 1280 x 1024
- UXGA : 1600 x 1200
- FHD : 1920 x 1080
- WUXGA : 1920 x 1200*

** Recommended for optimal picture quality*

Power Specifications:
Multi-power Supply:
- 115&230VAC - 50/60Hz + 24 VDC - HD 26T21 STD-Mxx-Fxxx

Note: You may connect either AC power or DC power or both. In case both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be a uninterrupted switch-over to DC input.

Power Consumption:
- Operating AC/DC : 125 W (max) TBC

Physical Considerations:
- 621.00 (W) x 435.00 (H) x 87.80 (D) mm
- 24.45" (W) x 17.13" (H) x 3.46" (D)
- 4 x M6 VESA mounting 280x150mm, Max 12mm deep
- Weight: TBD kg (approx)

Signal Terminals:
- DVI-D Signal IN : 1 x 24p DVI (female)
- RGB Signal IN : 1 x 15p HD D-SUB (female)
- SCOM RS-422/485 : 1 x 5-pin Terminal Block 3.81, non-isolated+Buzzer
- SCOM RS-232 : 1 x 9p D-SUB (female) non-isolated
- If Touchscreen : 1 x USB TYPE B Connector (female)
- AC Power IN : 1 x Std IEC Inlet
- DC Power IN : 1 x 2-pin Terminal Block 5.08

User Controls:
Behind front bezel - Glass Display Control™ (GDC) IP66:
- Power On/Off, On Screen Display Menu, Brightness Control (-/+)
- Hotkeys (left/right), Mode Status Indicators (ECDIS, Service)
- Buzzer (not visible), Light Sensor (not visible)

Environmental Considerations:
- Operating : Temperature -15 deg. C to +55 deg. C
  - Humidity up to 95%
- Storage : Temperature -20 deg. C to +60 deg. C
  - Humidity up to 95%
- IP Rating : Protection: IP66 front – IP22 rear (EN60529)

Safety Considerations:
Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Available Accessories:
- HD CMB SX1-C1 : 1 x Console Mount Kit
- HD TMB SX1-C1 : 1 x Table Mount Bracket. EN60945 Tested
- HD VED SX1-A1 : 1 x VESA Bracket

Please see user manual/datasheet for more information

Factory Options:
- Capacitive Touch Screen (USB interface)
- Optical Bonding Technology
- Color Calibrated models (ECDIS)
- Single AC Power 115&230VAC - 50/60Hz Input

For a full overview of typenumbers, please review the following link:
www.hatteland-display.com/pdflink/ind100780-3.php

Compass Safe Distance: HD 26T21 STD-xxx-Fxxx Standard: 125cm Steering: 80cm

APPROVALS & CERTIFICATES

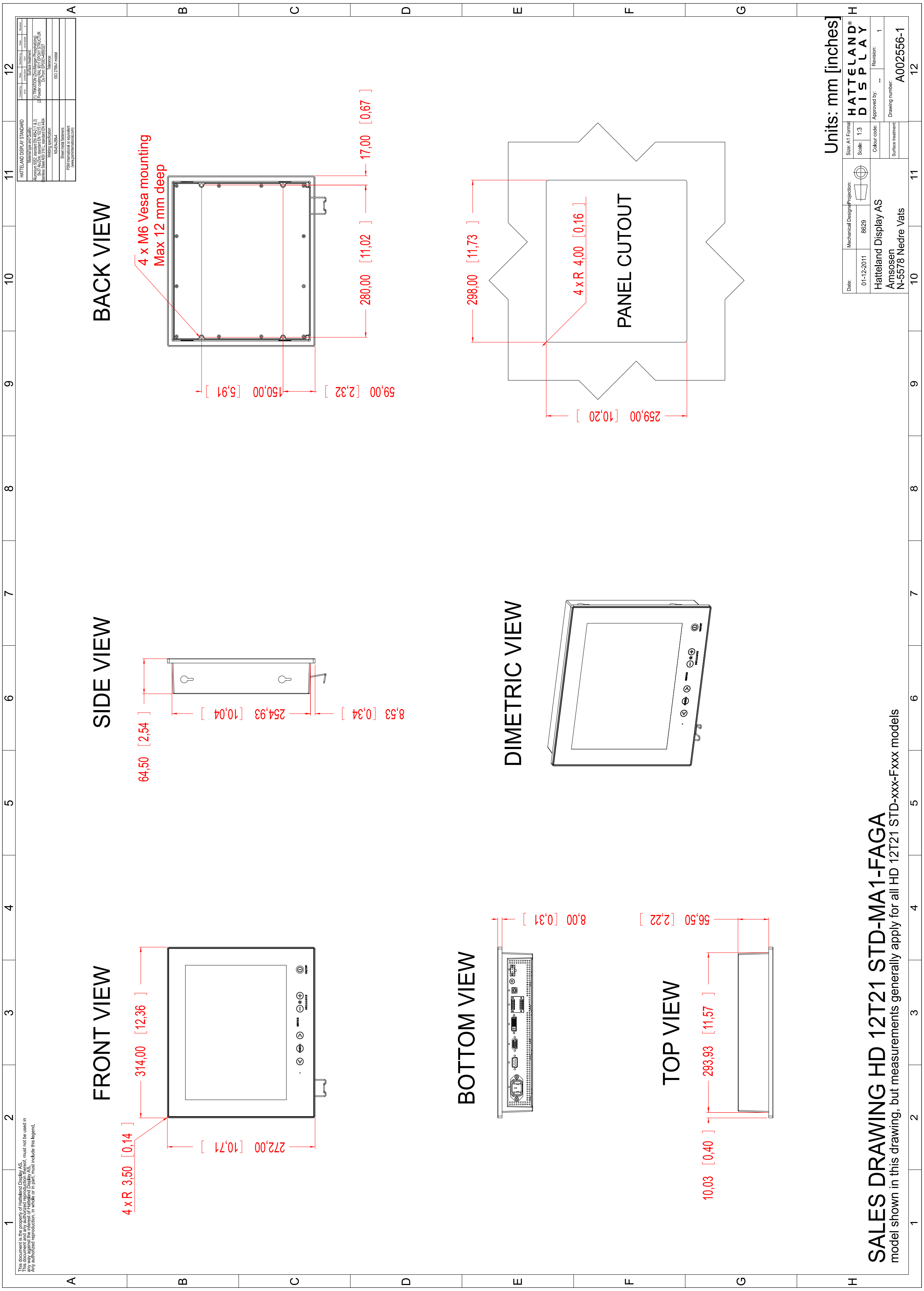
This product have been tested / type approved by the following classification societies:

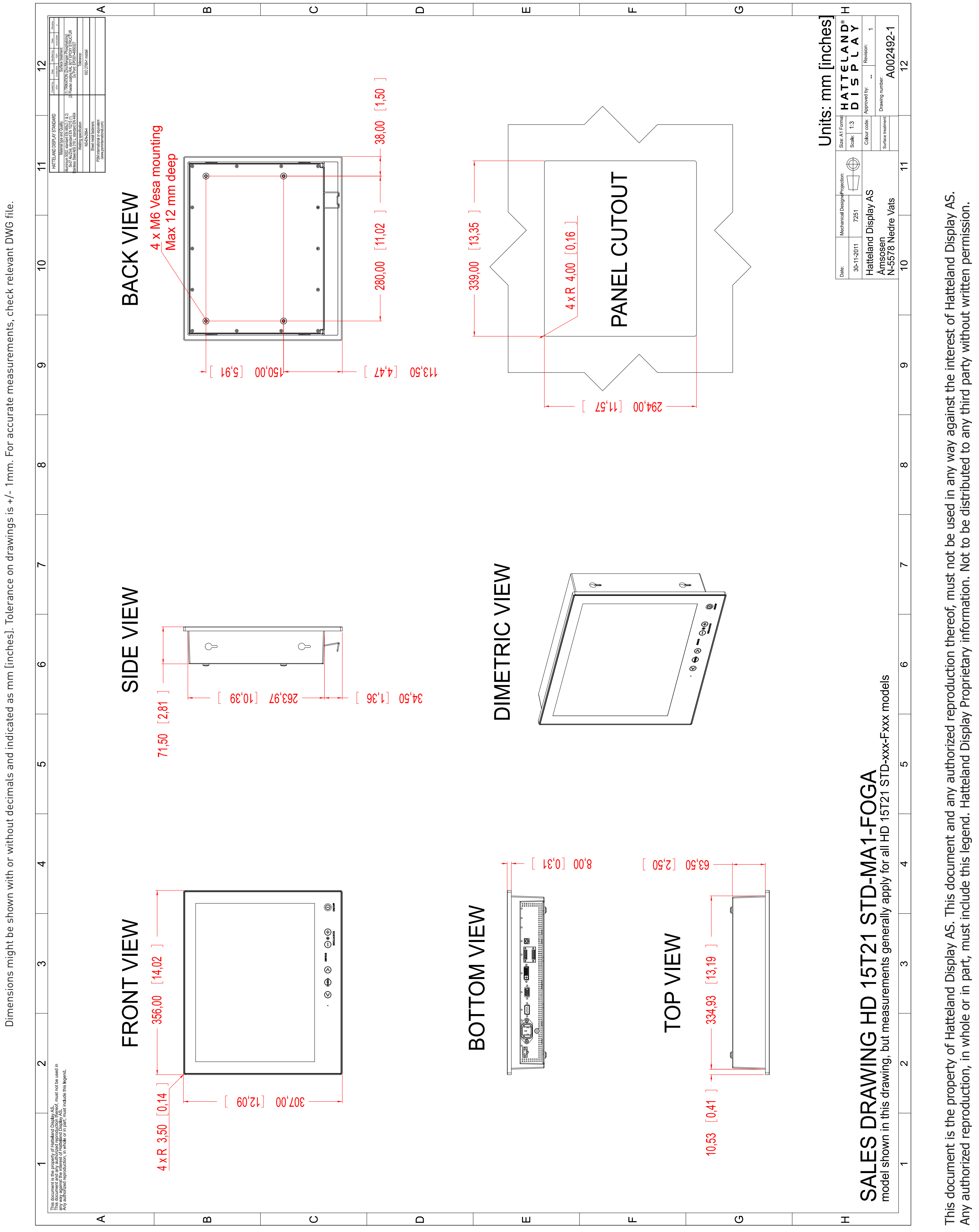
IEC 60945 4th (EN 60945:2002)	**IACS E10**	**ClassNK** - Nippon Kaiji Kyokai
GL - Germanischer Lloyd	**DNV** - Det Norske Veritas	**ABS** - American Bureau of Shipping
CCS - China Classification Society (Pending)	**BV** - Bureau Veritas	**LRS** - Lloyd's Register of Shipping (Pending)

This page left intentionally blank

Technical Drawings

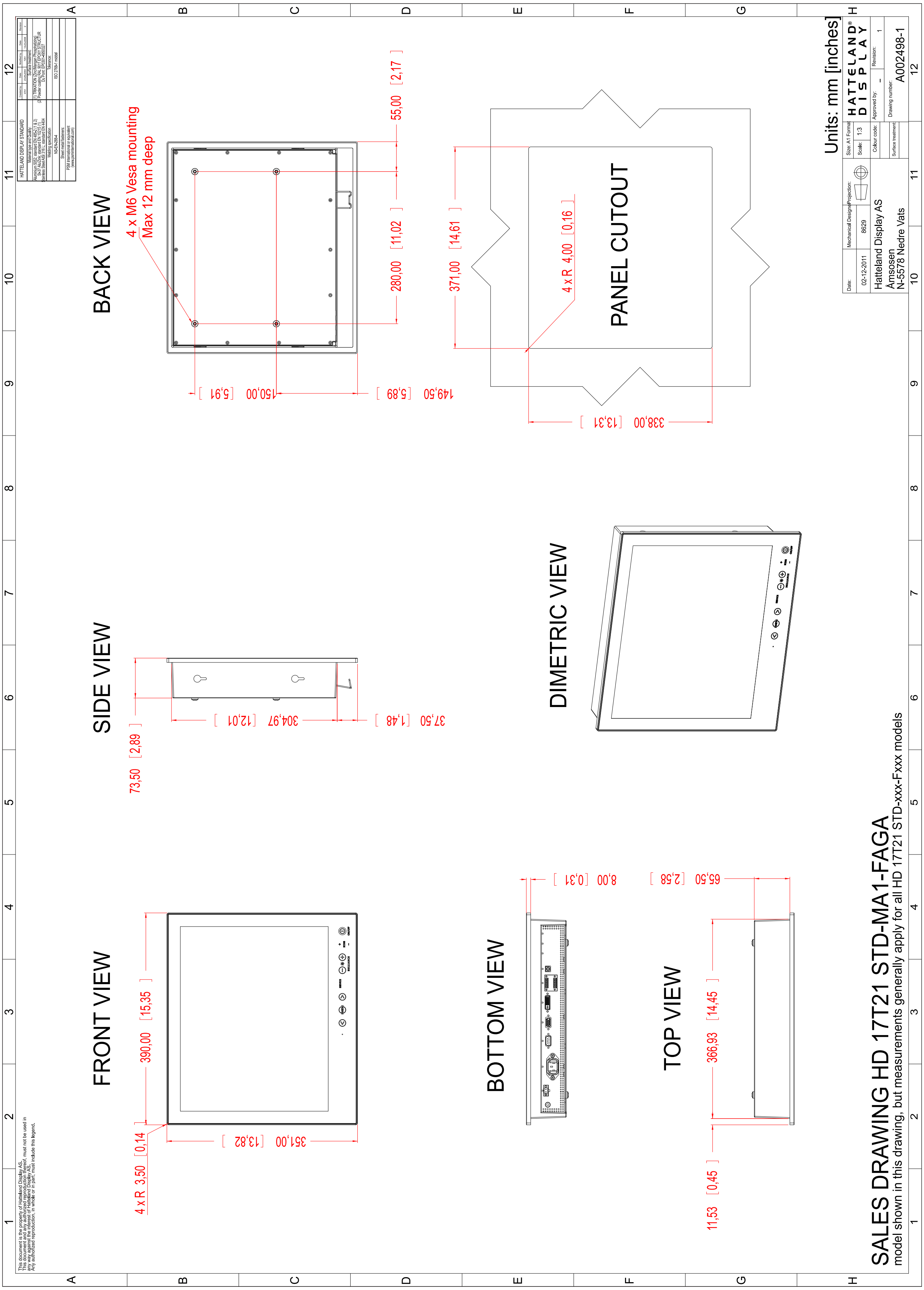
Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.





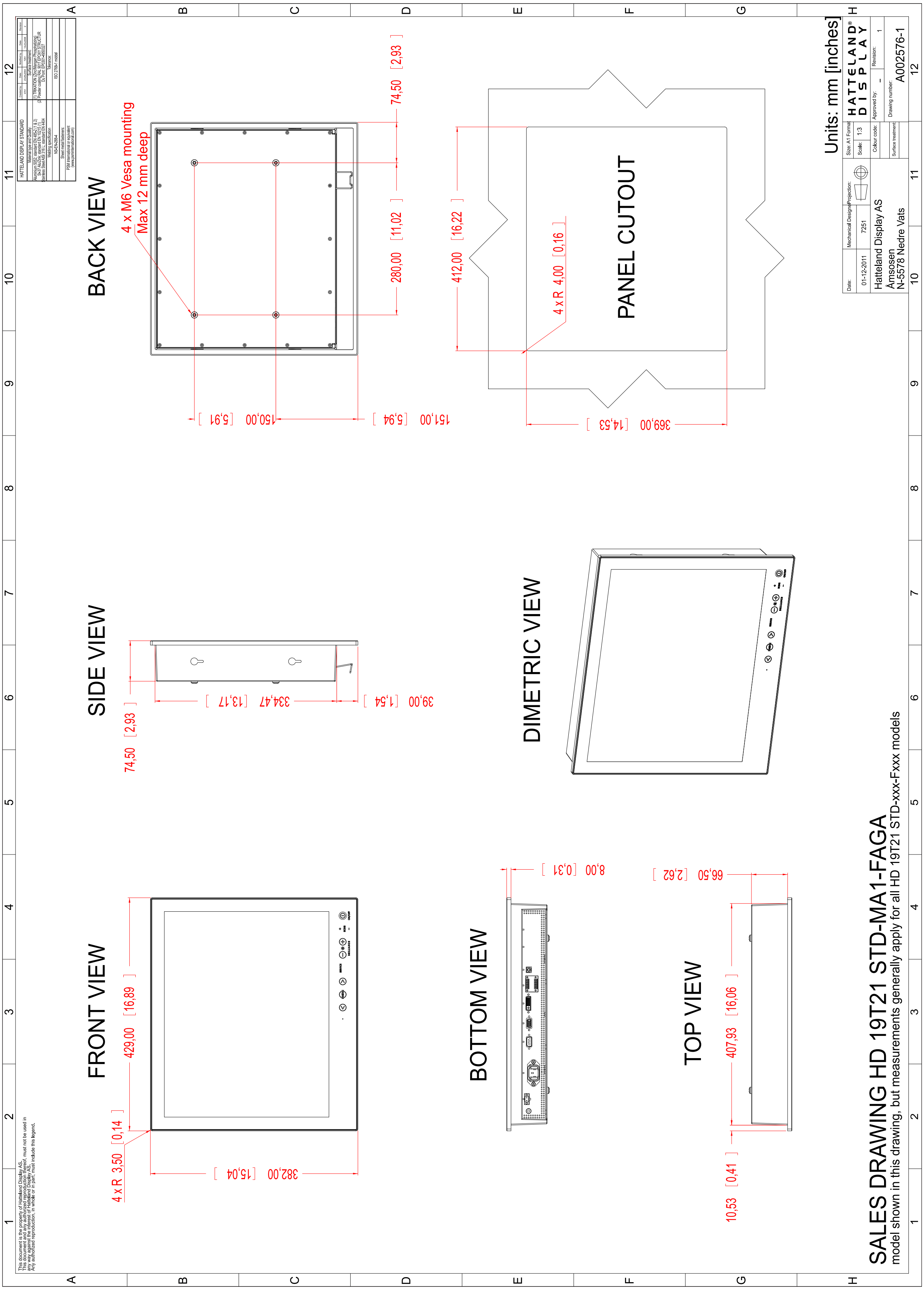
Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.
BACK VIEW
4 x M6 Vesa mounting
Max 12 mm deep
SIDE VIEW
FRONT VIEW
PANEL CUTOUT
DIMETRIC VIEW
BOTTOM VIEW
TOP VIEW
4 x R 4,00 [0,16]
4 x R 3,50 [0,14]
356,00 [14,02]
307,00 [12,09]
71,50 [2,81]
263,97 [10,39]
34,50 [1,36]
150,00 [5,91]
113,50 [4,47]
280,00 [11,02]
38,00 [1,50]
339,00 [13,35]
294,00 [11,57]
8,00 [0,31]
63,50 [2,50]
334,93 [13,19]
10,53 [0,41]
Units: mm [inches]
HATTELAND DISPLAY
A002492-1
Hatteland Display AS
Åmsosen
N-5578 Nedre Vats
SALES DRAWING HD 15T21 STD-MA1-FOGA
model shown in this drawing, but measurements generally apply for all HD 15T21 STD-xxx-Fxxx models
This document is the property of Hatteland Display AS. This document and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS.
Any authorized reproduction, in whole or in part, must include this legend. Hatteland Display Proprietary information. Not to be distributed to any third party without written permission.

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

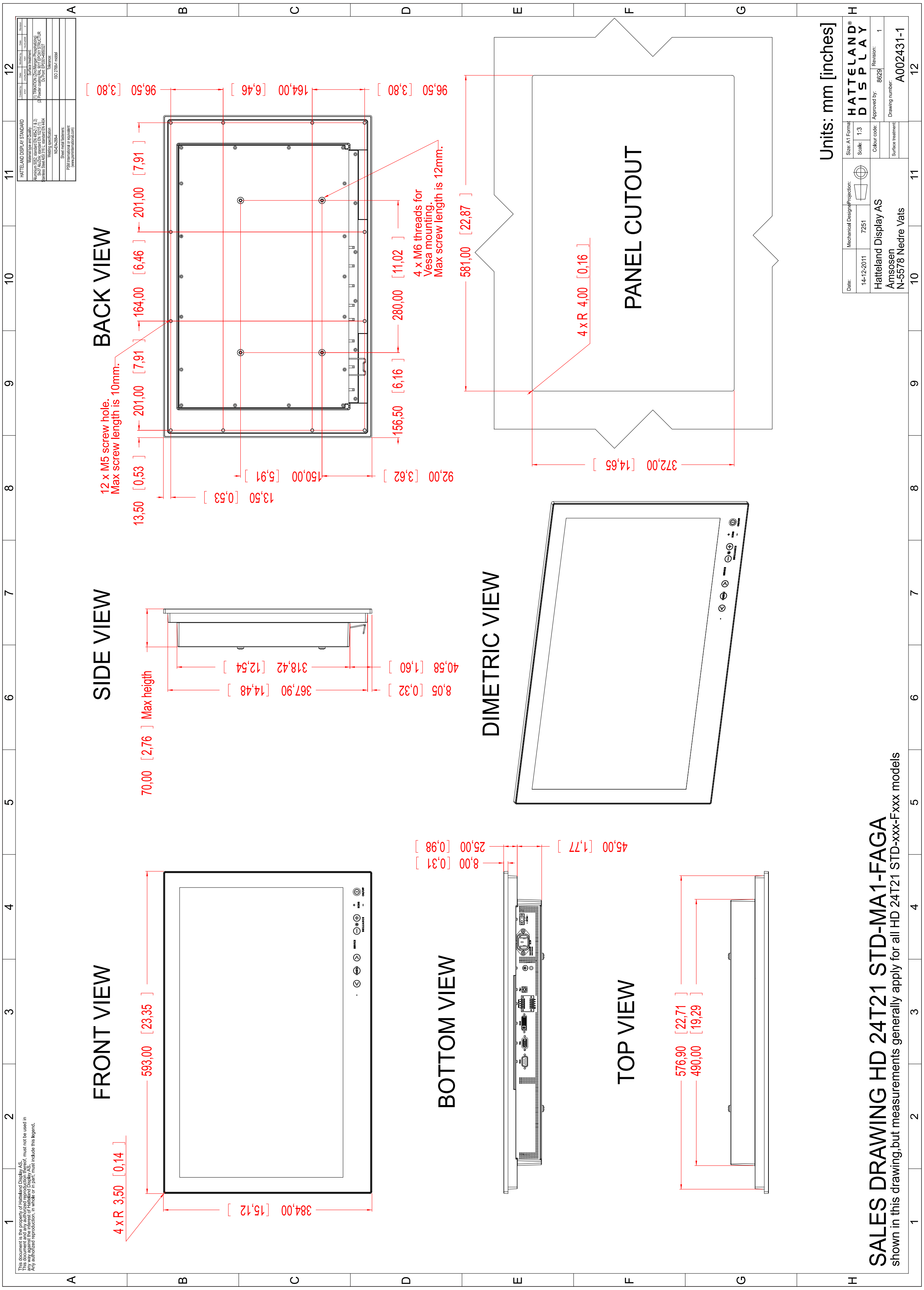


This document is the property of Hatteland Display AS. This document and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS. Any authorized reproduction, in whole or in part, must include this legend. Hatteland Display Proprietary information. Not to be distributed to any third party without written permission.

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

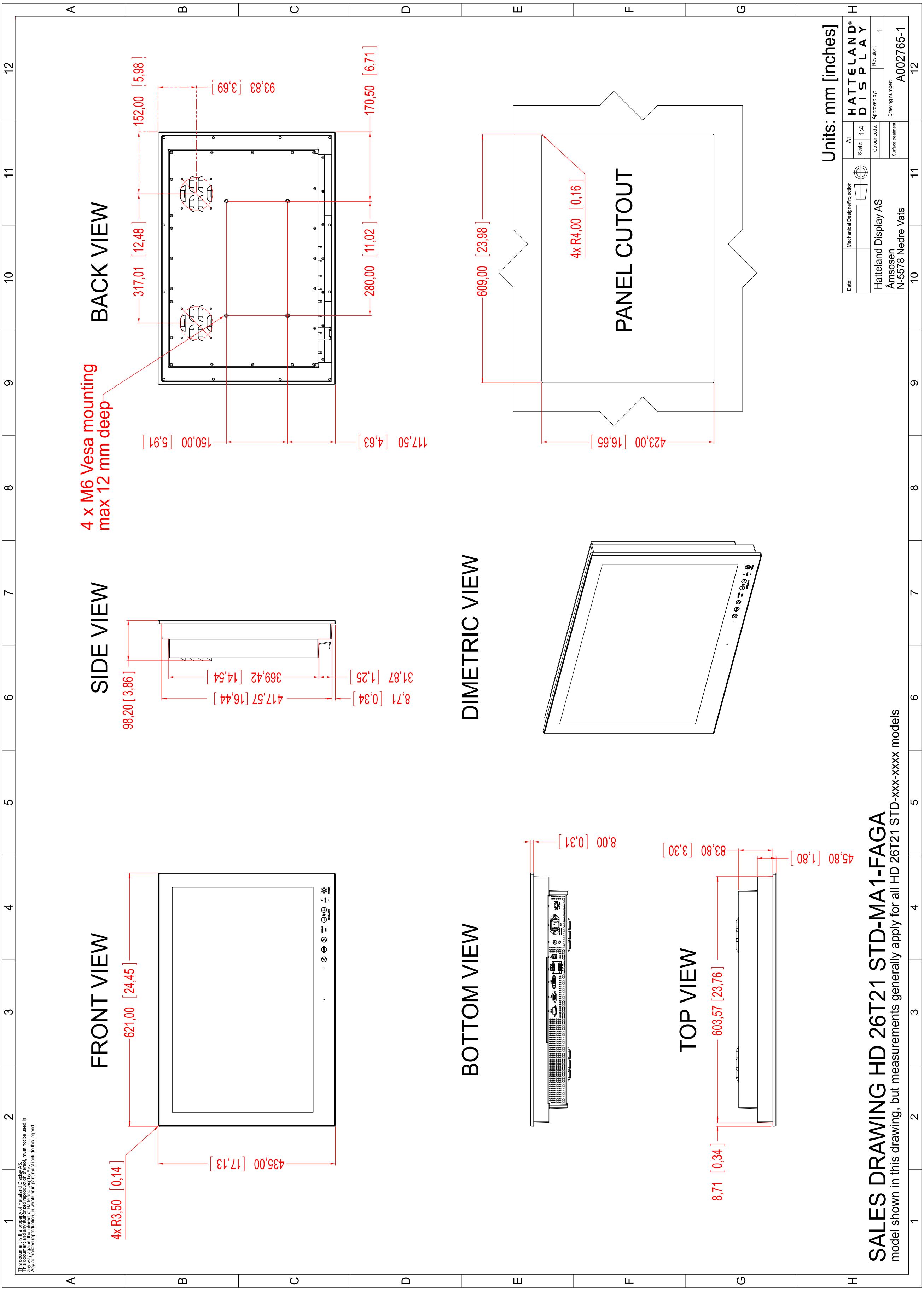


Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.



This document is the property of Hatteland Display AS. This document and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS. Any authorized reproduction, in whole or in part, must include this legend. Hatteland Display Proprietary information. Not to be distributed to any third party without written permission.

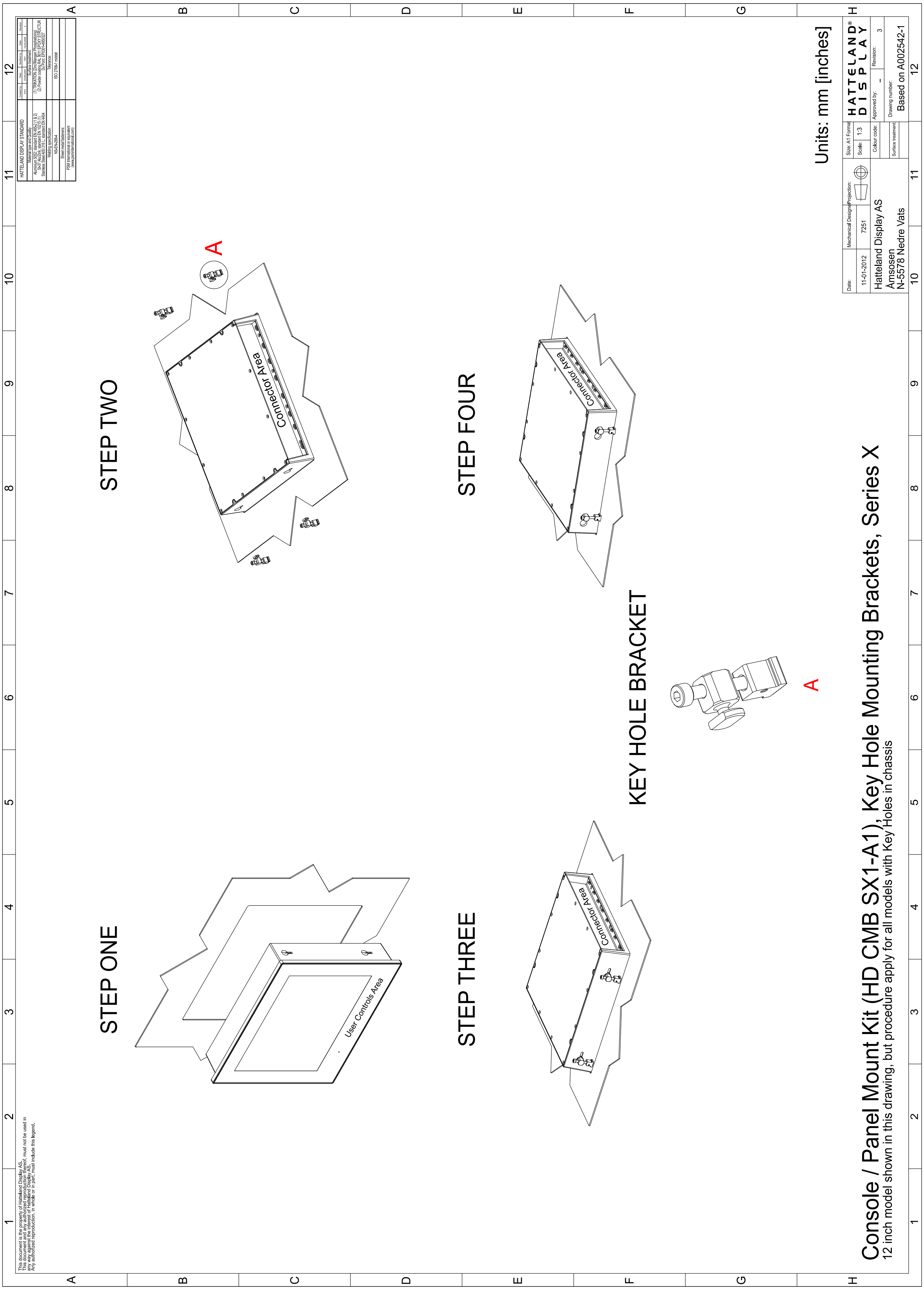
Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.



This page left intentionally blank

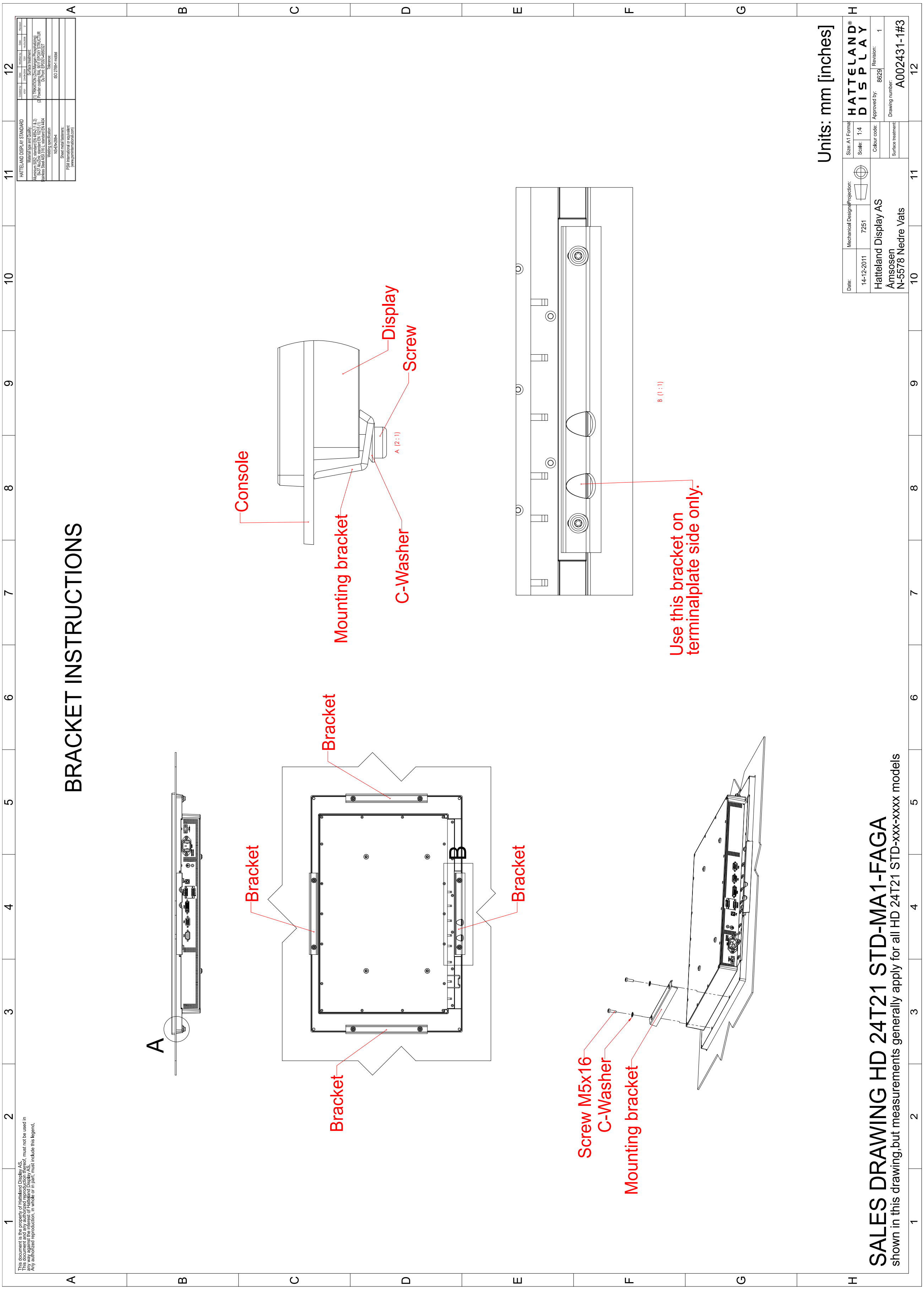
Technical Drawings - Accessories

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

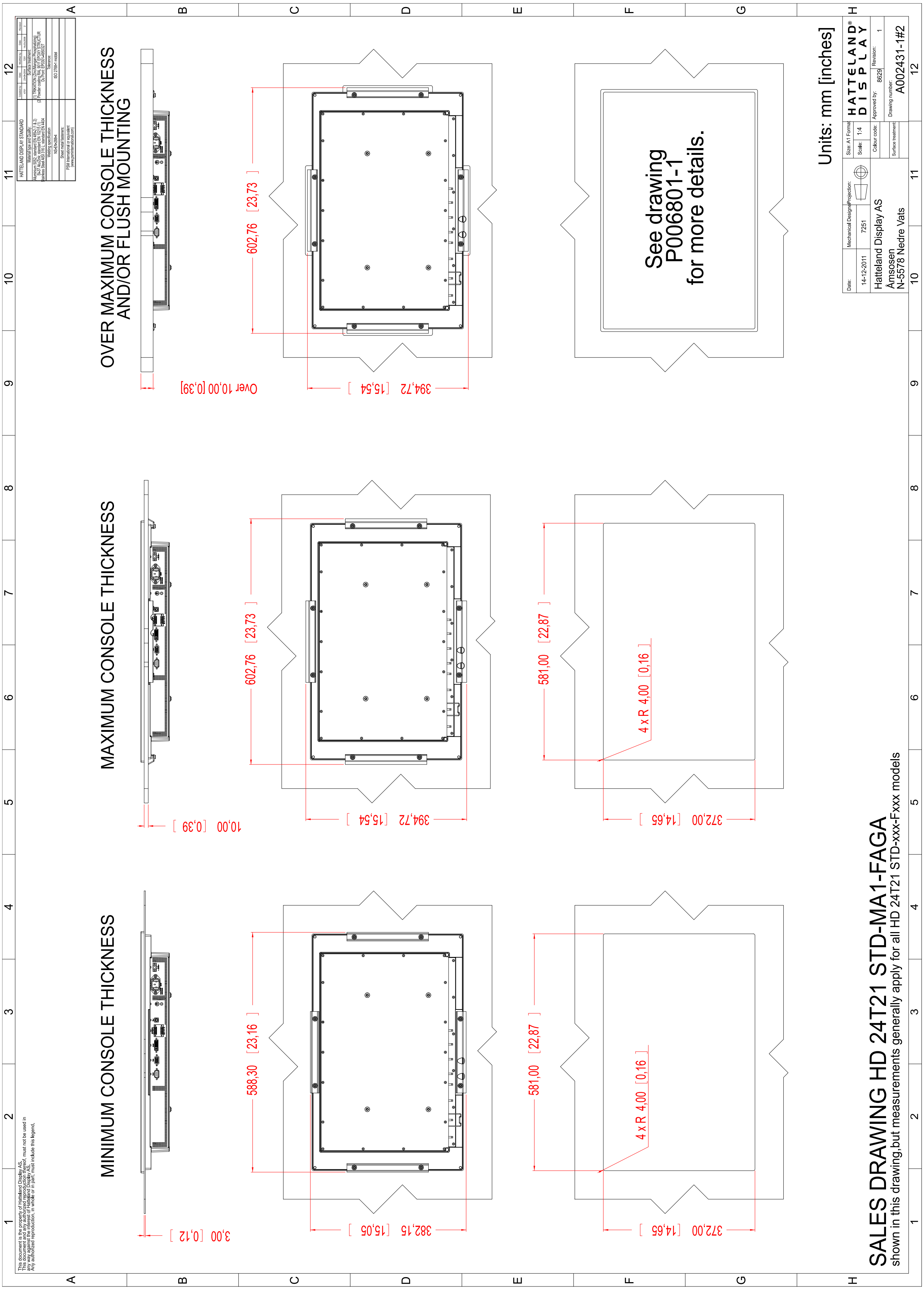


This document is the property of Hatteland Display AS. This document and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS. Any authorized reproduction, in whole or in part, must include this legend. Hatteland Display Proprietary information. Not to be distributed to any third party without written permission.

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

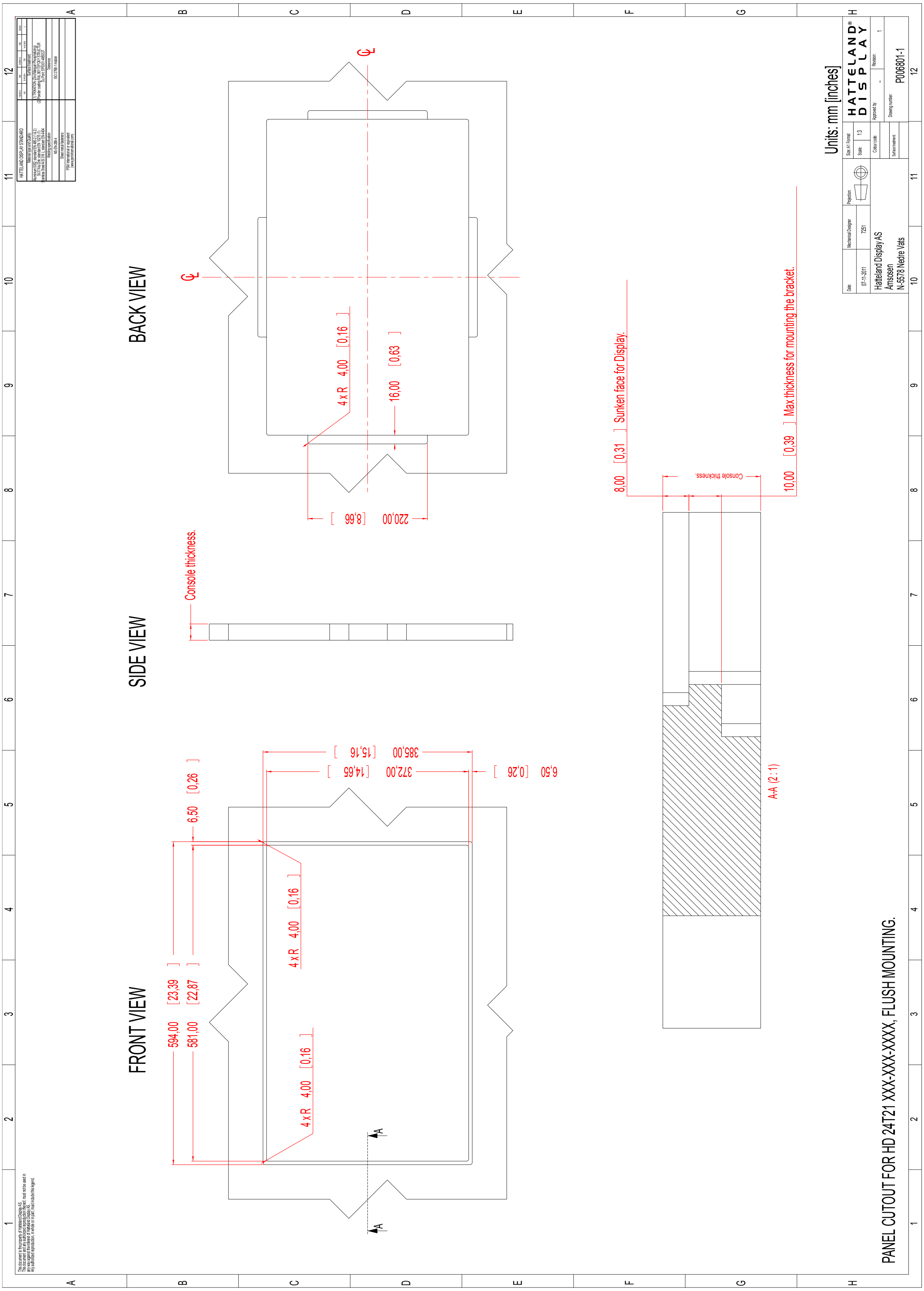


Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

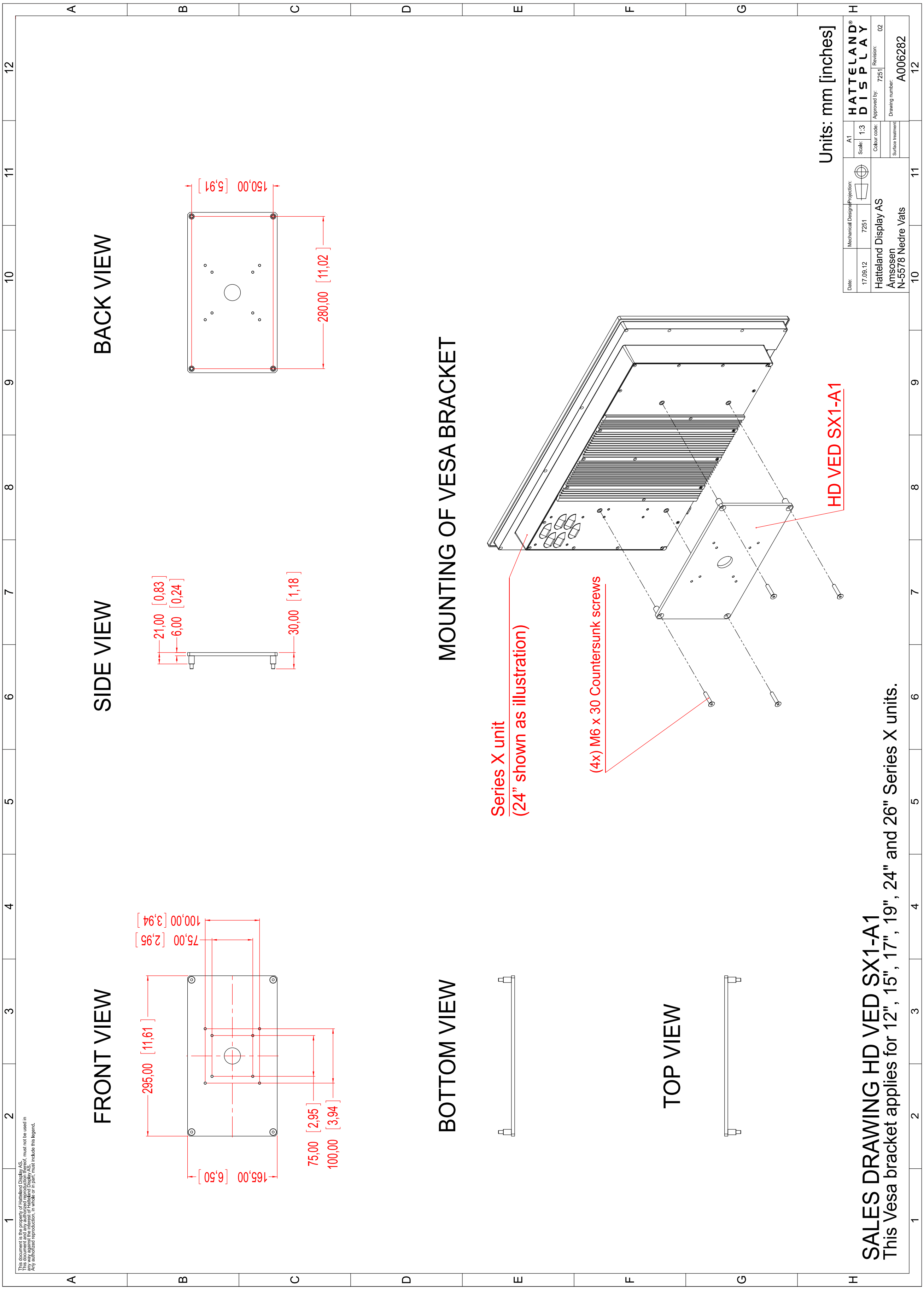


This document is the property of Hatteland Display AS. This document and any authorized reproduction thereof, must not be used in any way against the interest of Hatteland Display AS. Any authorized reproduction, in whole or in part, must include this legend. Hatteland Display Proprietary information. Not to be distributed to any third party without written permission.

Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.



Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.



Appendixes

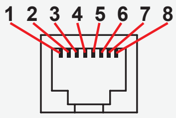
Pinout Assignments

ID's (1,2,3,A,B,C) denotes where connector is (by factory default) or may be available (through factory customization). Note that some combinations may not be possible due to space restrictions. List also valid for customized models.
All pin out assignments are seen from users Point of View (POV) while looking straight at the connector. Please review the dedicated datasheet or technical drawings for your actual unit to identify and determine the presence of desired connector. Detailed information about Housing Connectors (terminal blocks) can be found earlier in this manual.

1	Available for MMD (Maritime Multi Displays) units.
2	Available for STD (Industrial Standard Displays) units.
3	Available for MMC (Maritime Multi Computers / Panel Computers) units and/or Maritime Stand-Alone Computers (Compact, Fanless, Rack).
A	For 8 / 13 inch sizes only
B	For 12 / 15 / 17 / 19 / 24 / 26 inch sizes only
C	Factory Option: For Maritime Stand-Alone Computers units only.

8-pin RJ45 10/100/1000mbps LAN/Ethernet

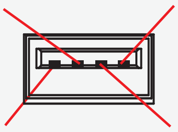
1 | 3 | A | B



PIN 01	D0P+	Differential Pair 0 (Positive)
PIN 02	D0N-	Differential Pair 0 (Negative)
PIN 03	D1P+	Differential Pair 1 (Positive)
PIN 04	D2P+	Differential Pair 2 (Positive)
PIN 05	D2N-	Differential Pair 2 (Negative)
PIN 06	D1N-	Differential Pair 1 (Negative)
PIN 07	D3P+	Differential Pair 3 (Positive)
PIN 08	D3N-	Differential Pair 3 (Negative)

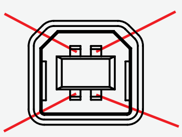
4-pin USB TYPE A

1 | 3 | A | B



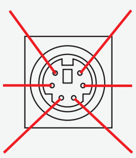
4-pin USB TYPE B

2 | A | B



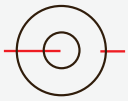
5-pin PS/2 KEYBOARD Female

3 | B



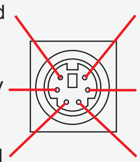
1-pin RCA/BNC COMP. VIDEO Female

1 | B



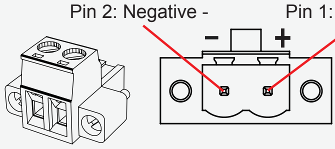
5-pin PS/2 MOUSE Female

3 | B



2-pin DC Power Input.

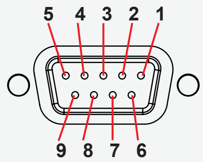
1 | 2 | 3 | A | B



9-pin Amplified Mono/Stereo Audio Out, DSUB Female

Type Number "HT 00235 OPT-A1"

3 | B

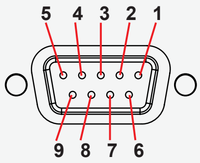


PIN 01	LAUDR	Left Audio Return*
PIN 02	LAUD	Left Audio*
PIN 03	RAUDR	Right Audio Return
PIN 04	RAUD	Right Audio
PIN 05	N/C	No internal connection
PIN 06	N/C	No internal connection
PIN 07	N/C	No internal connection
PIN 08	N/C	No internal connection
PIN 09	N/C	No internal connection

*For Mono: connect pin 01 and 02 only

Serial COM RS-232 non-isolated, 9-pin DSUB Female

1 | 2 | B

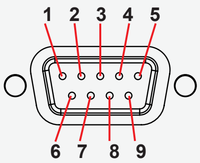


PIN 01	BUZ+	Buzzer Control Positive*
PIN 02	TxD	Transmit Data
PIN 03	RxD	Receive Data
PIN 04	DTR	Data Terminal Ready
PIN 05	GND	Ground
PIN 06	DSR	Data Set Ready
PIN 07	RTS	Request To Send
PIN 08	CTS	Clear To Send
PIN 09	BUZ-	Buzzer Control Negative*

*Wake On Ring is not enabled

Serial COM RS-232 non-isolated, 9-pin DSUB Male

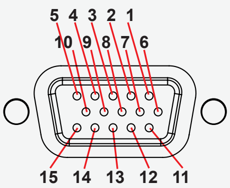
3 | B



PIN 01	DCD	Data Carrier Detect
PIN 02	RxD	Receive Data
PIN 03	TxD	Transmit Data
PIN 04	DTR	Data Terminal Ready
PIN 05	GND	Signal Ground
PIN 06	DSR	Data Set Ready
PIN 07	RTS	Request To Send
PIN 08	CTS	Clear To Send
PIN 09	RI	Ring Indicator

Analog RGB/VGA, 15-pin DSUB High Density Female

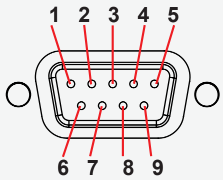
1 | 2 | 3 | A | B



PIN 01	RED	Red, analog
PIN 02	GREEN	Green, analog
PIN 03	BLUE	Blue, analog
PIN 04	ID2/RES	Reserved for monitor ID bit 2 (grounded)
PIN 05	GND	Digital ground
PIN 06	RED_RTN	Analog ground red
PIN 07	GREEN_RTN	Analog ground green
PIN 08	BLUE_RTN	Analog ground blue
PIN 09	KEY/PWR	+5V power supply for DDC (optional)
PIN 10	GND	Digital ground
PIN 11	ID0/RES	Reserved for monitor ID bit 0 (grounded)
PIN 12	ID1/SDA	DDC serial data
PIN 13	HSYNC.	Horizontal sync or composite sync, input
PIN 14	VSYNC.	Vertical sync, input
PIN 15	ID3/SCL	DDC serial clock

Serial COM RS-485/RS-422, 9-pin DSUB Male
"Full Duplex Mode*"

3 | B

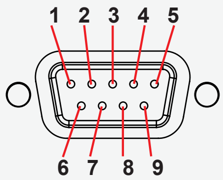


PIN 01	TxD-	Transmit Data Negative
PIN 02	TxD+	Transmit Data Positive
PIN 03	RxD+	Receive Data Positive
PIN 04	RxD-	Receive Data Negative
PIN 05	GND	Signal Ground
PIN 06	N/C	No internal connection
PIN 07	N/C	No internal connection
PIN 08	N/C	No internal connection
PIN 09	N/C	No internal connection

*Master only. ECHO not supported.

Serial COM RS-485/RS-422, 9-pin DSUB Male
"Half Duplex Mode*"

3 | B

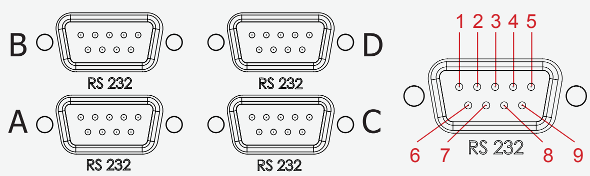


PIN 01	Res.	Reserved, do not connect
PIN 02	Res.	Reserved, do not connect
PIN 03	Data+	Data Positive
PIN 04	Data-	Data Negative
PIN 05	GND	Signal Ground
PIN 06	N/C	No internal connection
PIN 07	N/C	No internal connection
PIN 08	N/C	No internal connection
PIN 09	N/C	No internal connection

*ECHO not supported.
Half Duplex Configuration: Via Hatteland Display API.
Flow control: Via RTS signal (controlled by user application).

COM Module RS-232 - 4 x ports, 9-pin DSUB Male
Type Number "PCA100294-1"

3 | B

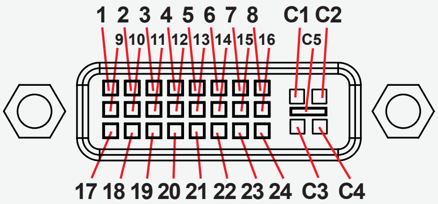


PIN 01	DCD	Data Carrier Detect
PIN 02	RxD	Receive Data
PIN 03	TxD	Transmit Data
PIN 04	DTR	Data Terminal Ready
PIN 05	GND	Signal Ground
PIN 06	DSR	Data Set Ready
PIN 07	RTS	Request To Send
PIN 08	CTS	Clear To Send
PIN 09	RI	Ring Indicator

Pinout Assignments

18/24/24+5 pin DVI-D, DVI-I, Single Link, Dual Link Combined Female

1 | 2 | 3 | A | B



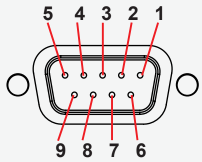
PIN 01	T.M.D.S. Data2 - (Digital - RED link 1)
PIN 02	T.M.D.S. Data2 + (Digital + RED link 1)
PIN 03	T.M.D.S. Data2/4 Shield
PIN 04	T.M.D.S. Data4 - (Digital - GREEN link 2)
PIN 05	T.M.D.S. Data4 + (Digital + GREEN link 2)
PIN 06	DDC Clock
PIN 07	DDC Data
PIN 08	Analog Vertical Sync (DVI-I only)
PIN 09	T.M.D.S. Data1 - (Digital - GREEN link 1)
PIN 10	T.M.D.S. Data1 + (Digital + GREEN link 1)
PIN 11	T.M.D.S. Data1/3 Shield
PIN 12	T.M.D.S. Data3 - (Digital - BLUE link 2)
PIN 13	T.M.D.S. Data3 + (Digital + BLUE link 2)
PIN 14	+5V Power (for standby mode)
PIN 15	Ground (for +5V and analog sync)
PIN 16	Hot Plug Detect
PIN 17	T.M.D.S. Data0 - (Digital - BLUE link 1) and digital sync.
PIN 18	T.M.D.S. Data0 + (Digital + BLUE link 1) and digital sync.
PIN 19	T.M.D.S. Data0/5 Shield
PIN 20	T.M.D.S. Data5 - (Digital - RED link 2)
PIN 21	T.M.D.S. Data5 + (Digital - RED link 2)
PIN 22	T.M.D.S. Clock Shield
PIN 23	T.M.D.S. Clock + (Digital clock + (Links 1 and 2)
PIN 24	T.M.D.S. Clock - (Digital clock - (Links 1 and 2)
PIN C1	Analog RED
PIN C2	Analog GREEN
PIN C3	Analog BLUE
PIN C4	Analog Horizontal Sync.
PIN C5	Analog Ground (return for RGB signals)

DDC = Display Data Channel.
.M.D.S = Transition Minimized Differential Signal
PIN C1,C2,C3,C4 = Only present on DVI-I connectors.

NOTE: Connector shows a DUAL LINK design, but some units may not support it.
Only units with 1920x1200 or more in resolution require / support DUAL LINK.

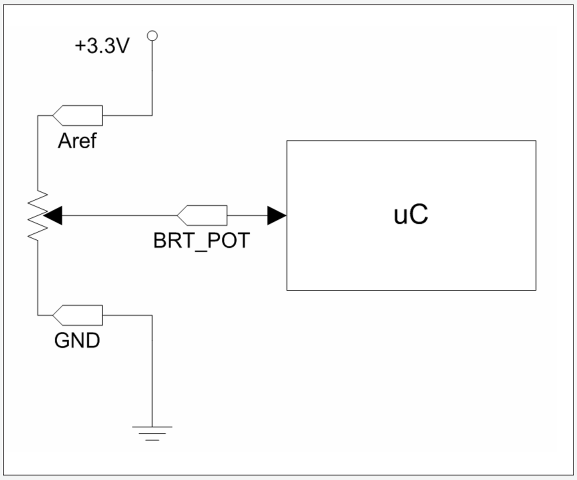
Potmeter Control, 9-pin DSUB Male

1 | B

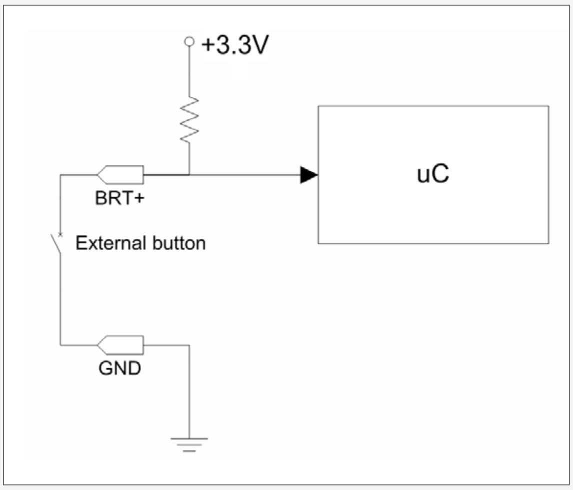


PIN 01	+5V	+5V out
PIN 02	Res.	Reserved, do not connect
PIN 03	Res.	Reserved, do not connect
PIN 04	Aref	For potensiometer
PIN 05	+12V	+12V out
PIN 06	BRT_POT	Potmeter in
PIN 07	BRT –	Button in
PIN 08	BRT+	Button in
PIN 09	GND	Ground

Potentiometer shall be 10kΩ and connected like this illustration below:

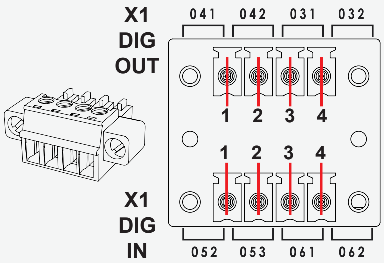


The BRT+ and BRT- can be used for controlling the brilliance by using external buttons. Example for the BRT+ input below:



8-pin Digital Output / Input Module
"Solid State Relay"

3 | A



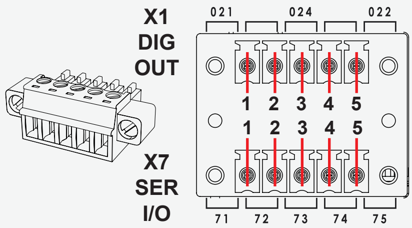
Pin 01	X1 - Out: **41**	Out +
Pin 02	X1 - Out: **42**	Out -
Pin 03	X1 - Out: **31**	COM (Common Center Terminal) *
Pin 04	X1 - Out: **32**	NC (Normally Closed)*

* IEC 60950 Compliant, 48VDC

Pin 01	X1 - In: **52**	+24VDC
Pin 02	X1 - In: **53**	GND (Ground)
Pin 03	X1 - In: **61**	+24VDC
Pin 04	X1 - In: **62**	+Input

10-pin Digital Output / Input & Serial Module
"Mechanical Relay & COM (isolated RS-422/485)"

3 | A

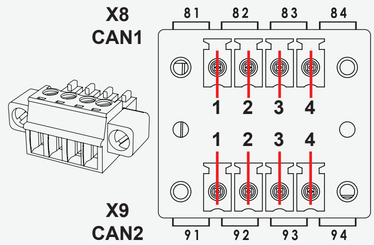


PIN 01	X1 - Out: **21**	COM (Common Center Terminal)
PIN 02	X1 - N/C	*Not Connected / Not used*
PIN 03	X1 - Out: **24**	NO (Normally Open)
PIN 04	X1 - N/C	*Not Connected / Not used*
PIN 05	X1 - Out: **22**	NC (Normally Closed)

PIN 01	X7 - In: **71**	Rx+ (Receive Data +)
PIN 02	X7 - In: **72**	Rx- (Receive Data -)
PIN 03	X7 - Out: **73**	Tx+ (Transmit Data +)
PIN 04	X7 - Out: **74**	Tx- (Transmit Data -)
PIN 05	X7 - GND: **75**	SGnd (Signal Ground)

4+4 pin CAN I/O Module, 2 channels
Type Number "HT 00254 OPT-A1"

3 | A | B

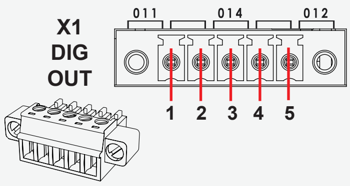


Pin 01	X8 - Can1: **81**	In Low
Pin 02	X8 - Can1: **82**	Out Low
Pin 03	X8 - Can1: **83**	In High
Pin 04	X8 - Can1: **84**	Out High

Pin 01	X9 - Can2: **91**	In Low
Pin 02	X9 - Can2: **92**	Out Low
Pin 03	X9 - Can2: **93**	In High
Pin 04	X9 - Can2: **94**	Out High

5-pin Digital Output Module
"Safety Signal Relay"

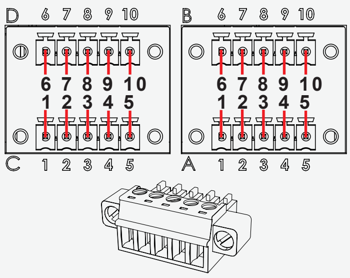
3 | A



PIN 01	X1 - Out: **11**	COM (Common Center Terminal)
PIN 02	X1 - N/C	*Not Connected Not in use*
PIN 03	X1 - Out: **14**	NO (Normally Open)
PIN 04	X1 - N/C	*Not Connected Not in use*
PIN 05	X1 - Out: **12**	NC (Normally Closed)

10+10 pin RS-422 / RS-485 NMEA Module
Type Number "PCA100293-1"

3 | A | B



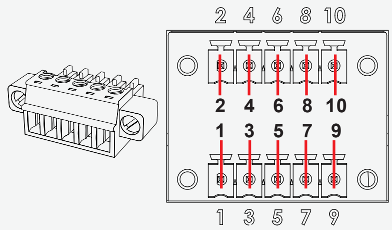
PIN 01	TxD-	Transmit Data Negative
PIN 02	TxD+	Transmit Data Positive
PIN 03	GND	Isolated Ground
PIN 04	RxD-	Receive Data Negative
PIN 05	RxD+	Receive Data Positive
PIN 06	TxD-	Transmit Data Negative
PIN 07	TxD+	Transmit Data Positive
PIN 08	GND	Isolated Ground
PIN 09	RxD-	Receive Data Negative
PIN 10	RxD+	Receive Data Positive

RS-485 Half Duplex (2-wire) Configuration:
Connect TX and RX pair-wise:
TX- to RX-, TX+ to RX+.

*Note: The jumper for "force of transmitter" is open by factory default. For some custom models this jumper is preset to closed (active), in that case unit has to be opened and jumper set to open to allow Half Duplex mode.

10-pin RS-422 / RS-485 Module
"RS-422/RS-485 SCOM Buzzer"

1 | 2 | B

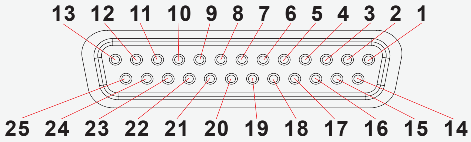


PIN 01*	RxD+	Receive Data Positive
PIN 02	GND	Ground
PIN 03*	RxD-	Receive Data Negative
PIN 04	+5V	+5V Out
PIN 05*	TxD+	Transmit Data Positive
PIN 06	BUZ-	Buzzer Control Negative
PIN 07*	TxD-	Transmit Data Negative
PIN 08	BUZ+	Buzzer Control Positive
PIN 09	GNDR	Ground 100Ω
PIN 10	GND	Ground

*Pin 1,3,5,7 = RS-485 Full Duplex (4-wire)
*Pin 5,7 = RS-485 Half Duplex (2-wire)

Pin Assignments - 25-pin Female Parallel (Optional for selected computers)

3 C



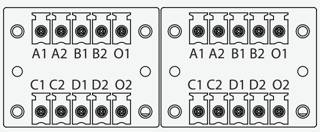
Pin 01	STROBE	This signal indicates to the printer that data at PD7..0 are valid.
Pin 02	DATA0	Parallel data bus from PC board to printer. The data line are able to operate in PS/2 compatible bi-directional mode.
Pin 03	DATA1	Same as Pin 02
Pin 04	DATA2	Same as Pin 02
Pin 05	DATA3	Same as Pin 02
Pin 06	DATA4	Same as Pin 02
Pin 07	DATA5	Same as Pin 02
Pin 08	DATA6	Same as Pin 02
Pin 09	DATA7	Same as Pin 02
Pin 10	ACK	Signal from printer indicating that the printer has received the data and is ready to accept further data.
Pin 11	BUSY	Signal from printer indicating that the printer cannot accept further data.
Pin 12	PE	Signal from printer indicating that the printer is out of paper.
Pin 13	SELECT	Signal from printer to indicate that the printer is selected.
Pin 14	AUTO FEED	This active low output causes the printer to add a line feed after each line printed.
Pin 15	ERR#	Signal from printer indicating that an error has been detected.
Pin 16	INIT#	This active low output initialises (resets) the printer.
Pin 17	SLIN#	Signal to select the printer sent from CPU board to printer.
Pin 18	GND	Ground
Pin 19	GND	Ground
Pin 20	GND	Ground
Pin 21	GND	Ground
Pin 22	GND	Ground
Pin 23	GND	Ground
Pin 24	GND	Ground
Pin 25	GND	Ground

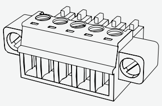
10+10 pin Isolated Digital Input/Output Module

Type Number “HT00268 OPT-A1”

3 C

Module A **Module B**





Module A			Module B	
A1	External Power +		A1	IN+[0]
A2	N/C (Not Connected)		A2	IN-[0]
B1	External Power - (GND1)		B1	IN+[1]
B2	N/C (Not Connected)		B2	IN-[1]
O1	HS[0]		O1	N/C
C1	HS[1]		C1	IN+[2]
C2	N/C (Not Connected)		C2	IN-[2]
D1	HS[2]		D1	IN+[3]
D2	N/C (Not Connected)		D2	IN-[3]
O2	HS[3]		O2	N/C

GENERAL ISSUES FOR TFT PANEL BASED PRODUCTS

Note: Applies for a range of various products. This is only meant as a general guide.

NO PICTURE / LED BEHAVIOUR:

If there is no light at all in the LED at the FRONT, check power cables. If the LED in front is green then check if the brightness is set/adjusted to max brightness. Lack of image is most likely to be caused by incorrect connection, lack of power or wrong BIOS settings.

SCROLLING / UNSTABLE IMAGE:

Signal cable may not be completely connected to computer or TFT display. Check the pin assignments and signal timings of the display and your video card with respect to recommended timing and pin assignments. Make sure that the video card is compatible and that it is properly seated / installed on the computer.

DISPLAY AREA IS NOT CENTERED / SIZED CORRECTLY

Make sure that a supported video mode has been selected on the display, or on the video card / system. If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test it again using another graphics card for the PC system. This situation may occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal, such as a signal splitter (please note that normally a signal splitter will not have any adverse effect). If it is impossible to change to the correct resolution/color depth, check if you have the right graphics driver installed in your system.

IMAGE APPEARANCE:

A faulty TFT panel can have black lines, pixel errors, failed sections, flickering or flashing image. Incorrect graphic card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, it may scroll, flicker badly or possibly even no image is present. Sparkling on the display may be a faulty TFT panel signal cable, and it needs service attention.

RGB Signal Only: Horizontal interference can usually be corrected by adjusting the PHASE (OSD menu).
Vertical interference can usually be corrected by adjusting the FREQUENCY (OSD menu).

DEW CONDENSATION BEHIND GLASS:

Note that this problem will not occur on bonded products. For non-bonded products, do the following:
Power on the TFT product and set brightness to 100%. Turn off any automatic screensavers on PC or similar. During minutes the dew will be gone. To speed up the process, use a fan heater for a reasonable time. Do not overheat the unit.

GENERAL ISSUES FOR COMPUTER BASED PRODUCTS

Note: Applies for a range of various products. This is only meant as a general guide.

CD-ROM FAILURE OR READ/DETECTION PROBLEMS:

If the product are operated/located in a area with extreme condensation, the CD/DVD drive may not work correctly due to condensation on the read head. Keep the product on for a while until it’s reached normal operating temperature, and retry accessing discs. Otherwise, consider using USB memory sticks or alternative storage devices.

NO CD-ROM AVAILABLE ON YOUR PRODUCT FOR INSTALLING DRIVERS/SOFTWARE:

Please use USB memory sticks, USB Floppy drive, USB CD-Rom Drive or alternative storage devices to transfer/install software on CD-ROM-less units.

HATTELAND® DISPLAY

Declaration of Conformity

We, manufacturer, **Hatteland Display AS,** Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the
JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD, HT MMC and HD MMC product ranges is in conformity with the following standards in accordance with the EMC Directive.

Low Voltage Directive 2006/95/EC
EN 60950

EMC Directive 2004/108/EC
EN 55022 Class A
EN 55024

Signature:..
Frode Grindheim
Vice President Product Management
Nedre Vats, Norway

Signature:..
Arne Kristiansen
Site Manager - Test & Commission Division
Oslo, Norway

CE MARK FIRST AFFIXED DATE (11 March 2010)

Declaration of Conformity

We, manufacturer, **Hatteland Display AS,** Åmsosen, N-5578 Nedre Vats, Norway
declare under our sole responsibility that the JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD, HT STD, HD MMD, HM MMD, HT MMC and HD MMC product ranges is in conformity with IEC 60945 4th (EN 60945:2002) and IACS E10 (where applicable)

HATTELAND® DISPLAY

Declaration of Conformity

We, manufacturer, **Hatteland Display AS,** Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the products listed below comply with
FCC 47 CFR Part 15, Subpart B, Class A:

JH MMD, JH MMC, JH STD, JH MIL, HM NMD, HM MIL, HM CMD,
HT STD, HD MMD, HM MMD, HT MMC and HD MMC product ranges.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Signature:..
Frode Grindheim
Vice President Product Management
Nedre Vats, Norway

Signature:..
Arne Kristiansen
Site Manager - Test & Commission Division
Oslo, Norway

FCC MARK FIRST AFFIXED DATE (16 February 2012)

Return Of Goods Information

Return of goods:

(Applies not to warranty/normal service/repair of products)

Hatteland Display referenced as “manufacturer” in this document.

Before returning goods, please contact your system supplier before sending anything directly to manufacturer. When you return products after loan, test, evaulation or products subject for credit, you must ensure that all accessories received from our warehouse is returned. This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

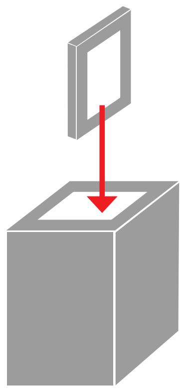
This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at manufacturer incoming goods control. Please contact our service/sales department if additional questions



Handling and packing units for return/credit

To prevent damage during shipping and transportation, respect the guidelines below.

Make sure you surround the product with the following material (whenever possible):



Use the original packaging from manufacturer, firm foam material, bubble wrap, lots of PadPack paper or foam chips/polyester wrapped in sealed plastic bags. Please make sure that the unit is protected with a surrounding plastic bag to prevent dust accumulation around the unit.

If you do not have the original packaging or are uncertain how to secure the unit properly, please consider seeking advice from nearby shipping or transportation offices, if in doubt!

Do not under any circumstances use loose foam chips, expanded polyester, clothes, cardboard with sharp edges/spikes, too little or nothing to secure the unit inside the box. Do not use cardboard boxes that are clearly too weak or not suitable for securing the unit properly during overseas shipment.

Terms Of Sale And Delivery

1) APPLICATION
The terms of sale and delivery apply for Hatteland Display.

2) PRICE
a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case of alternation on the above mentioned.

b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of too late payment 1.5% interest/month will be charged. Seller has mortage rights in the goods delivered until the purchase price, additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Hatteland Display charge NOK 50,- in forwarding fee for orders below NOK 1000,-.
Freight charge according to expenses for orders above NOK 1000,-. VAT not included.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance of complaint can not be counted on.

10) WARRANTY / SERVICES
Time of warranty is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's warranty regulations. The warranty does no longer apply if:

I) there has been encroached upon the goods without seller's consent
II) terms of payment is not fulfilled
III) the goods have been damaged due to unskilled treatment
IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way.

Minimum requirements: CECC 00015's standards for handling of such components. The warranty does not include fair wear and tear.

11) RESPONSIBLITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied goods do not include secondary damage or loss.

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer's account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RMA). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restricted according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier's native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL
Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE
When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder's copy of the way-bill or on the driving slip.

3) RESCUE
Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT
Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:

- for carriage by sea:	within 3 days
- for overland / air transportation	within 7 days

5) DOCUMENTATION
For any claims the following documentation is required, and must be forwared to the company or their agent: invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.

PIXEL DEFECT POLICY

Dot-defects (Bright or dark spots on the panel)

Due to the effect that dot failures are part of the TFT technology such failure occurrence cannot be prevented basically. Even though dot defects usually occur during production process, new defects can appear within the lifespan of a TFT display. Neither the production at LCD-supplier nor the use of a LCD-Monitor after shipment can be influenced by Hatteland Display. Hence Hatteland Display cannot be made responsible for such dot failures. However Hatteland Display understand and accepts the responsibility towards the customers for the delivery of new displays, therefore accepts a limitation on dot defect's occurrence on new displays delivered to the customer.

PRINCIPLES

a. One pixel consists of 3 dots (Red, Green and Blue)

b. Dot defects are differentiated between:
- Bright dot defects: Spot on the panel appear as pixels or sub pixels that are always lit. Non-extinguishing dot.
- Dark dot defects: Spot on the panel appear as pixels or sub pixels that are always dark (off). Non-lightening dot.

c. Inspector observes the LCD from normal direction at a distance of 50cm above the worktable. Dark dots are counted under entire white screen. Bright dots are counted under entire black screen.

d. Dot failures within tolerances below do not qualify for warranty claims.

PIXEL DEFECT TOLERANCES

Bright dot	≤ 4 dots
Two adjacent bright dots *	≤ 2
Distance between 2 dot defects *	≥ 15mm
Dark dots	≤ 8
Total number of bright or dark dot defects. *	≤ 8

* 1 or 2 adjacent dot defects considered as 1 defect.

EXTRAORDINARY CIRCUMSTANCES

Possible cases which cannot be influenced either by customer or Hatteland Display.

Examples for extraordinary circumstances:
- Allocation from LCD-Supplier
- Outstanding high number of LCD-panels with bright dots but within LCD-suppliers Specification.
- Sharply increased demand by customer

In such cases a mutual agreement is inevitable.

Examples:
- Acceptance of bright dots in "non-critical" display areas.
- Acceptance of bright dots with defined color.

Last Revised July 2007

General Notes:

- The unit is type approved according to EN60945 4th, 4.4, equipment category b) protected from the weather.

- Other type approvals applies for the different products.
  Please see the appropriate "Specifications" page in this manual for more information.

- Use of brillance and Glass Display Control™ (touch key functions) may inhibit visibility of information at night.

Note for units equipped with an PCTS (Projected Capacitive) Touch Screen:

Reference to Engineering Change Notification June 2013: http://www.hatteland-display.com/mails/10_2013_ecn.html

Touch Screen Firmware V1001 (12 inch) and V1000 (15,17,19,24):
For Maritime Multi Display (MMD) / Industrial Standard Display (STD) units the touch screen signals are routed through the display unit via the USB port and can not be controlled / detect status by the unit itself in any way. It means that even if the unit was turned off by the front bezel Power ON/OFF function, the touch screen is still active and it will still send touch screen signals through the pipeline.

This can be an issue to consider when you are cleaning the front glass. In order to avoid sending touch screen signals, you have to either physically cut power to the unit, making sure that no lights illuminate, or disconnect the USB cable physically from either computer or display unit. You may also disable the touch screen functionality from within the Operating System (OS) or via customized functions from within applications running on the external computer you have connected.

Touch Screen Firmware V1002 (12 inch) and V1001 (15,17,19,24,26):
Issue described above has been solved. For Maritime Multi Display (MMD) / Industrial Standard Display (STD) units regarding cleaning of front glass, you have to be aware that in order to avoid sending touch screen signals to a connected computer, you have to turn off the Display unit (via its front Power Symbol) and clean the front glass. When done cleaning, simply turn on the Display again and Touch Screen controller is automatically re-activated.

To learn more about how to properly clean glass surfaces, review the "Ergonomics" section in the "General Installation Recommendations" chapter earlier in this manual.

User Notes

Revision History

Rev.	By	Date	Notes
00-1	BU SE	23 Feb 2012	Release for internal review.
00-2	ALL SE	16 Mar 2012	Revised after internal review.
01	BU SE	14 May 2012	Release for internet
02	AK SE	17 Aug 2012	Revised type approvals and removed MTBF data, page 40,41,42,43,44,45
03	BU SE	18 Jun 2013	Revised Contents of Package (connectors), page 6 Added General Touch Screen Info and labels page 10,11,12,13,14,15 Revised Product Labeling chapter, ref: QAR/117540, page 12,13,14,15 Added point 1. to Ergonomics section, cleaning, page 21 Added section “Installation limitations”, page 19,20 Revised point 7 in General mounting instructions, grounding, page 20 Added Housing Connector overview, page 23,24 Added Installation procedures for HD TMB SX1-C1 and HD 19BRD SX1-A1, page 27,28,29 Removed High Bright option for all STD models, page 52,53,54,55,56 Revised 26 inch datasheet, no Projected Capacitive possible, only Capacitive Touch Screen, page 57 Revised 26 inch technical drawings from preliminary to rev1, page 65 Added accessory HD VED SX1-A1 VESA Bracket drawing, page 72 Added note for PCTS (Projected Capacitive) Touch Screen, page 85 Added LED Backlight Technology, page 57 - Reference: http://www.hatteland-display.com/mails/06_2013_ecn.html